MONTANA DEPARTMENT OF TRANSPORTATION WETLAND MITIGATION MONITORING REPORT: YEAR 2010

Lonepine Wetland Mitigation Project Flathead Indian Reservation, Montana



Prepared for:



December 2010

Prepared by:



and



MONTANA DEPARTMENT OF TRANSPORTATION (MDT)

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Lonepine Wetland Mitigation Project Flathead Indian Reservation, Montana

MDT Project Number STPX 45(33) Control Number 4729

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1. INTRODUCTION

The Lonepine Mitigation 2010 Monitoring Report summarizes the results of the third year of monitoring at the Lonepine mitigation site. The Lonepine project was constructed to mitigate for wetland impacts incurred by the Montana Department of Transportation (MDT) Lonepine North and East highway reconstruction project. Excess wetland credits may be applied toward future MDT highway projects in the area. The project was constructed on MDT property between summer 2007 and summer 2008, in conjunction with the adjacent Lower Dry Fork Reservoir dam re-construction. Project goals were the development of 23.83 acres of US Army Corps of Engineers (USACE) approved wetland credit and 11.86 acres of Confederated Salish and Kootenai Tribes (CSKT) approved wetland credit at the 80-acre site.

The project is located at 2,840 feet above mean sea level (amsl) on the west edge of the Flathead Indian Reservation, approximately 1.5 miles west of Lonepine and south of the Lower Dry Fork Reservoir dam. The project area is shown on the Lonepine US Geologic Survey (USGS) 7.5' topographic map in the NW quarter of the Section 3, Township 22 North, Range 24, West (Figure 1). Figures 2 and 3 in Appendix A show the Monitoring Activity Locations and Mapped Site Features of the site, respectively. Appendix B includes the MDT Wetland Site Mitigation Monitoring Form, USACE Wetland Determination Data Forms (Environmental Laboratory 1987), and the MDT Montana Wetland Assessment Forms. Representative photographs of the project area are included in Appendix C and the Project Plan Sheet is included in Appendix D.

The mitigation design focused on providing emergent wetlands and a minor component of aquatic bed and scrub-shrub wetlands. The target wetland functions included wildlife habitat, sediment/nutrient/toxicant removal, surface water storage, and production export/food chain support.

The project encompasses a series of five wetland cells. The primary water source is the Lower Dry Fork Reservoir via the Camas C Canal and the secondary source is precipitation. A general mitigation site layout is provided in Appendix D. Project objectives are listed below (PBS&J 2009).

- Maximize emergent wetland development, associated wildlife habitat, nutrient / toxicant removal functions, surface water storage functions, and production export / food chain support on the site by constructing several large, interconnected cells that flood to a maximum depth of approximately one foot.
- Restore sinuosity and connectivity to ditched and straightened segments of Dry Fork Creek, including reactivation of a cutoff meander loop.
- Provide a riparian scrub-shrub component by revegetating restored Dry Fork Creek channel margins and intercell watercourses with riparian shrub species.





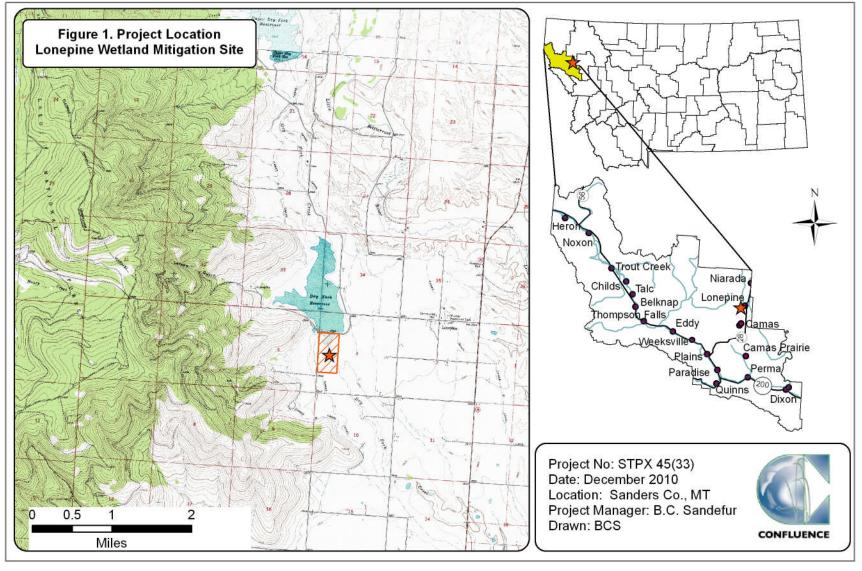


Figure 1. Project Location Lonepine Wetland Mitigation Site.



- Enhance and protect uplands and existing wetlands along Dry Fork Creek by removing grazing from the site, planting upland shrubs, prohibiting development, and fencing.
- Minimize operational maintenance and promote a self-sustaining system by placing permanent spillways at all cell outlets to control water elevations.

The determination of mitigation credits for this project was coordinated between the USACE and the CSKT Shoreline Protection Office (Table 1). The final approved performance standards (PBS&J 2009) are listed below. The USACE stated that all created wetlands within the project corridor will meet the three parameter criteria for hydrology, vegetation, and soils established for determining wetland areas as outlined in the 1987 USACE *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987).

- Wetland Hydrology and Open Water Success will be achieved where wetland hydrology is present as per the technical guidelines in the 1987 Manual. Hydrologic success will also require that constructed channels be stable in wetlands that include channel reconstruction as described below.
- 2. Hydric Soil Success will be achieved where hydric soil conditions are present (per the most recent Natural Resource Conservation Service [NRCS] definitions for hydric soil) or appear to be forming, the soil is sufficiently stable to prevent erosion, and the soil is able to support plant cover. Soil sampling will be conducted during the course of the monitoring period to determine if wetland areas are exhibiting characteristics of hydric soils per the 1987 Manual. Since typical hydric soil indicators may require long periods to form, a lack of distinctive hydric soil features will not be considered a failure if hydrologic and vegetation success is achieved. Soil receiving gypsum treatment will be sampled yearly during drawdown in order to monitor the effectiveness of the experimental treatment in reducing baseline slickspot conditions (pH of 10.6; 357 meq/L sodium; SAR of 500; and electrical conductivity of 23.1 mmhos/cm).
- 3. Hydrophytic Vegetation Success will be achieved in areas not receiving gypsum treatment where combined aerial cover of facultative or wetter species is greater than or equal to 80 percent and noxious weeds do not exceed 10 percent of total cover. Cattail basal coverage is not to exceed 50 percent in any cell except Cell 2.

Wetlands will be delineated as per the technical guidelines in the 1987 Manual. The following concept of "dominance", as defined in





the 1987 Manual, will be employed during future routine wetland determination in created/restored wetlands: "Subjectively determine the dominant species by estimating those having the largest relative basal area (woody overstory), greatest height (woody understory), greatest percentage of aerial cover (herbaceous understory), and/or greatest number of stems (woody vines)."

4. Stream Channel Restoration Success will be evaluated in terms of revegetation success and bank stability success. Revegetation will be considered successful if noxious weeds do not exceed 10 percent cover, cuttings exhibit 50 percent survival after 3 years, and planted shrubs exhibit 75 percent survival after 5 years (or planted shrub densities are increased to accomplish the same projected net survival of individuals at a 50 percent survival rate over 5 years.

Bank stability success will be evaluated by identifying a reference reach along an adjacent, undisturbed portion of the channel below the restoration. The percentage of eroding channel and bed elevation will be evaluated for both restoration and reference channels. For this purpose "eroding bank" will be defined as any bank greater than two feet in length that is more than 50 percent bare mineral soil and has no roots, surface vegetation, or other stabilizing structure (e.g. rock, woody debris) to inhibit erosion. Bank stability success will be achieved when, following restoration, less than 25 percent of banks are unstable or the percent stability of the restored channel is within 5 percent of the reference reach. Vertical stability success will be achieved when, following restoration, vertical movement of the new channel is not greater than 10 percent of vertical movement at the reference reach.

- 5. Intercell Swale Success will be evaluated in terms of revegetation success if wetlands do not develop. Revegetation will be considered successful if noxious weeds do not exceed 10 percent cover and planted shrubs exceed 75 percent survival after 5 years. If wetlands develop, success will be evaluated in terms of wetland hydrology, hydric soil, and hydrophytic vegetation success as described above.
- 6. **Secondary Restoration/Minor Rehabilitation Success** will be achieved when the site is fenced and grazing is removed from existing wetlands.
- 7. **Upland Buffer Success** will be achieved when the site is fenced and noxious weeds do not exceed 10 percent of cover within the buffer. Any area within the creditable buffer zone disturbed by





project construction must have at least 50 percent aerial cover of non-weed species by the end of the monitoring period.

Table 1. Final Confederated Salish and Kootenai Tribes (CSKT) and USACE credit ratios for the Lonepine Wetland Mitigation Project.

	TYPE OF	TYPE OF	MITIGATION SITE ESTABLISHED PRIOR TO IMPACTS		
PROPOSED MITIGATION FEATURE	MITIGATION USING CSKT DEFINITIONS	MITIGATION USING USACE DEFINITIONS ²	CSKT Credit Ratio Credit Acreage Credit Ratio	USACE Credit Acreage ²	
Approximately 21.35 acres (ac) of new emergent wetland / open water at five shallow wetland cells and one excavation area.	Creation	Creation	1:3.04 ratio 7.02 acres credit	1:1 ratio 21.35 acres credit (OW credit limited to amount equaling 10% of total wetland area)	
Approximately 0.30 ac at Dry Fork Creek stream channel and wetland/riparian fringe re-constructed through upland between the Camas C Canal and Wetland 1, and between Wetland 1 (ditched Dry Fork Creek segment) and Wetland 3 (historic meander channel).	Primary Restoration	Re-establishment	1:1.54 ratio 0.19 acre credit	1:1 ratio 0.30 acre credit	
Approximately 0.04 ac of re-constructed Dry Fork Creek channel within Wetland 1 (ditched Dry Fork Creek segment).	Primary Restoration	Rehabilitation	1:1.54 ratio 0.03 acre credit	1:1.5 ratio 0.03 acre credit	
Dry Fork Creek channel restoration plus restoration of hydrologic function at 0.26 ac Wetland 3 (historic meander channel).	Primary Restoration	Rehabilitation	1:1.54 ratio 0.17 acre credit	1:1.5 ratio 0.17 acre credit	
Protection of and grazing removal at approximately 6.64 wetland acres that will remain on the project site following Lower Dry Fork Dam rehabilitation.	Secondary Restoration	Minor Rehabilitation	1:1.54 ratio 4.31 acres credit	1:5 ratio 1.33 acres credit	
Approximately 0.43 ac of new riparian swales between wetland cells.	No Definition	No Definition	1:3.04 ratio 0.14 acre credit	1:4 ratio 0.11 acre credit	
Approximately 4.45 ac of upland buffer between Wetland 1 and the farmed slope to the east of the project.	None (no planting proposed, thus, no CSKT credit)	Upland Buffer	None (no planting proposed, thus, no CSKT credit)		
I	11.86 acres	23.85 acres			

Wetland Mitigation Guidelines for the Flathead Reservation (PBS&J 2009).
Mitigation Ratios, Montana Regulatory Program (PBS&J 2009).





2. METHODS

The site was monitored on August 22, 2010. Information contained on the Mitigation Monitoring Form and Wetland Data Form was entered electronically in the field on a personal digital assistant (PDA) palmtop computer during the field investigation (Appendix B). Monitoring activity locations were mapped with a global positioning system (GPS) as illustrated on Figure 2 (Appendix A). Information collected included wetland delineation, vegetation community mapping, vegetation transect monitoring, soils data, hydrology data, bird and wildlife use documentation, photographs, functional assessments, planted woody species monitoring, and a non-engineering examination of the infrastructure established within the mitigation project area.

2.1. Hydrology

Technical criteria for wetland hydrology guidelines have been established as "permanent or periodic inundation, or soil saturation within 12 inches of the ground surface for a significant period (usually 14 days or more or 12.5 percent) during the growing season" (Environmental Laboratory 1987). The growing season is defined for purposes of this report as the number of days where there is a 50 percent probability that the minimum daily temperature is greater than or equal to 28 degrees Fahrenheit" (Environmental Laboratory 1987).

Hydrological indicators as outlined on the Wetland Data Form were documented at 10 points established within the project area. Hydrologic indicators were evaluated according to features observed during the site visit. The data were recorded on electronic field data sheets (Appendix B). Hydrologic assessments allow evaluation of mitigation goals addressing inundation/saturation requirements.

No groundwater monitoring wells are present on the site. Soil pits excavated during the wetland delineation were used to evaluate groundwater levels within 18 inches of the ground surface. The data were recorded electronically on the Wetland Data Form (Appendix B). The boundary between wetlands and open water was mapped on the aerial photograph and an estimate of the average water depth at the boundary was recorded.

2.2. Vegetation

The boundaries of general dominant species-based vegetation communities were determined in the field during the active growing season and subsequently delineated on aerial photographs. The percent cover of dominant species within a community type was estimated and recorded using the following values: 0 (less than 1 percent); 1 (1 to 5 percent); 2 (6 to 10 percent); 3 (11 to 20 percent); 4 (21 to 50 percent); and 5 (greater than 50 percent) (Appendix B).

Temporal changes in vegetation were evaluated through annual assessments of static belt transects (Figure 2, Appendix A). Vegetation composition was assessed and recorded along two vegetation belt transects approximately 10 feet





wide and 150 feet (Transect 1) and 300 feet long (Transect 2) (Figure 2, Appendix A). The transect locations were recorded with a global positioning system (GPS) unit. Spatial changes in the dominant vegetation communities were documented along the stationed transect. The percent cover of each vegetation species within the transect was estimated using the same values and cover ranges listed in the above paragraph (Appendix B). Photographs were taken at the endpoints of each transect during the monitoring event (Appendix C).

The location of noxious weeds was noted in the field during the investigation and mapped on the aerial photo (Figure 3, Appendix A). The noxious weed species identified are color-coded. The locations are denoted with the symbol "+", "▲", or "■" representing 0 to 0.1 acres, 0.1 to 1.0 acres, or greater than 1.0 acre in extent, respectively. Cover classes are represented by a T, L, M, or H, for less than 1 percent, 1 to 5 percent, 2 to 25 percent, and 25 to 100 percent, respectively.

2.3. Soil

Soil information was obtained from the Soil Survey for Sanders and parts of Lincoln and Flathead Counties and in situ soil descriptions (NRCS 2010). Soil cores were excavated using a hand auger and evaluated according to procedures outlined in the 1987 Wetland Manual. A description of the soil profile, including hydric indicators when present, was recorded on the Wetland Data Form for each profile (Appendix B).

Two soil samples were taken and analyzed for pH, electrical conductivity, calcium, magnesium, sodium and sodium absorption ration (SAR) in 2008 and 2010 for comparative purposes. Soil sampling locations were mapped using a GPS.

2.4. Wetland Delineation

Waters of the US including jurisdictional wetlands and special aquatic sites were delineated throughout the project area in accordance with criteria established in the Wetland Manual. In order to delineate a representative area as wetland, the technical criteria for hydrophytic vegetation, hydric soil, and wetland hydrology, as described in the 1987 Manual, must be satisfied. The indicator status of vegetation was derived from the National List of Plant Species that Occur in Wetlands: Northwest Region 9 (Reed 1988). A Routine Level-2 On-site Determination Method (Environmental Laboratory 1987) was used to delineate wetland areas within the project boundaries. The information was recorded electronically on the Wetland Data Form (Appendix B).

Consultation with the USACE determined that the 1987 Manual should continue to be used at MDT mitigation sites where baseline wetland conditions had been established prior to 2008. Consequently, the use of the 2010 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (USACE 2010) was not required.





The wetland boundary was determined in the field based on changes in plant communities and/or hydrology, and changes in soil characteristics. Topographic relief boundaries within the project area were also examined and cross referenced with soil and vegetation communities as supportive information for this delineation. Vegetation composition, soil characteristics, and hydrology were assessed at likely wetland and adjacent upland locations. If all three parameters met the criteria, the area was designated as wetland and mapped by vegetation community type. If any one of the parameters did not exhibit positive wetland indicators, the area was determined to be upland unless the site was a special aquatic site, an atypical situation, or a problem area. The wetland boundary was identified on aerial photography. Wetland areas were estimated using geographic information system (GIS) methodology.

2.5. Wildlife

Observations and other positive indicators of use of mammal, reptile, amphibian, and bird species were recorded on the wetland monitoring form during the site visit. Indirect use indicators, including tracks, scat, burrow, eggshells, skins, and bones, were also recorded. These signs were recorded while traversing the site for other required activities. Direct sampling methods, such as snap traps, live traps, and pitfall traps, were not used. A comprehensive list of wildlife species observed onsite from 2008 to 2010 was compiled.

2.6. Functional Assessment

The 1999 MDT Montana Wetland Assessment Method (MWAM) (Berglund 1999) was used to complete functional assessments of the site in 2003. The 2008 MWAM (Berglund and McEldowney 2008) was used in 2009 and 2010. The assessment method provides an objective means of assigning wetlands an overall rating and of assessing mitigation success based on wetland functions. Functions are self-sustaining properties of a wetland ecosystem that exist in the absence of society and relate to ecological significance without regard to subjective human values (Berglund and McEldowney 2008). The 2008 revision refined ratings for some wetland functions, land management, and fish and wildlife habitat.

Field data for this assessment were collected during the site visit. A Wetland Assessment Form was completed for each wetland or group of wetlands (Assessment Areas-AA) (Appendix B).

2.7. Photo Documentation

Monitoring at photo points provides supplemental information documenting wetland condition, trends, current land use surrounding the site, the upland buffer, the monitored area, and the vegetation transects. Photographs were taken at established photo points throughout the mitigation site during the site visit (Appendix C). Photo point locations were recorded with a resource grade GPS unit (Figure 2, Appendix A).





2.8. GPS Data

Site features and survey points were collected with a resource grade Thales Pro Mark III GPS (Global Positioning System) unit during the 2010 monitoring season. Points were collected using WAAS-enabled differential corrected satellites, typically improving resolution to sub-meter accuracy. The collected data were then transferred to a personal computer, subsequently exported into GIS, and drawn in Montana State Plane Single Zone NAD 83 meters. In addition to GPS, some site features within the site were hand-mapped onto an aerial photograph and then digitized. Site features and survey points that were mapped included fence boundaries, photograph points, transect endpoints, wetland boundaries, non-wetland plant community boundaries, and soil sample locations.

2.9. Maintenance Needs

Channels, engineered structures, fencing, and other features were examined during the site visit for obvious signs of breaching, damage, or other problems. This was a cursory examination that did not constitute an engineering-level structural inspection.

3. RESULTS

3.1. Hydrology

There are 146 consecutive days in the growing season based on the available temperature data between 1918 and 1969 for the Lonepine meteorological station (245164) (WRCC 2010). The site would have to be inundated or saturated within 12 inches of the ground surface for 18 days to meet the wetland hydrology criteria. The weather station was closed in 1969.

Water for the project is supplied primarily by the Lower Dry Fork Reservoir via the Camas C Canal. Approximately 40 percent of the mitigation site was inundated during the 2010 investigation. The average surface water depth across the site was 1 foot and the depth ranged from 0 to 2 feet. Areas delineated as wetlands that were not inundated exhibited saturation within one foot of the ground surface based on test pit data (see below).

Two corresponding data points, one in upland and one in wetland, were established at five locations to determine the upland and wetland boundaries (Wetland Data Forms, Appendix B). The data point locations are shown on Figure 2 in Appendix A. The ten data points were named C1D (cell 1, dry) and C1W (cell 1, wet) through C5D and C5W. There were no wetland hydrology indicators present at the data points located in upland, specifically C1D to C5D. Data points C1W to C5W were sampled in areas that met all three wetland criteria. Primary wetland indicators at C1W to C5W were inundation, saturation in the upper 12 inches of the soil horizon, water marks, and drift lines. Surface water levels ranged from three to seven inches deep at each of the five data points within a wetland. Secondary indicators included the FAC-Neutral Test and water-stained leaves at data point C1W.





3.2. Vegetation

A list of 89 vegetation species identified from 2008 to 2010 is presented in Table 2 (Monitoring Form, Appendix B). Nine community types, six wetland and three upland, were identified at the mitigation site in 2010 (Figure 3, Appendix A). A review of the 2009 and 2010 photographs included in Appendix C show a notable increase in vegetation cover in the constructed cells site wide.

The community types were Type 2 – *Scirpus* spp./*Beckmannia syzigachne* Wetland, Type 4 – *Agropyron trachycaulum* Wetland, Type 5 – *Agropyron trachycaulum/Elymus triticoides* Upland, Type 6 – *Kochia scoparia* Upland, Type 7: *Phalaris arundinacea/Salix* spp Wetland, Type 8 – *Typha latifolia/Scirpus* spp., Wetland, Type 9 – *Beckmannia syzigachne /Glyceria striata* Wetland, Type 11 – *Distichlis spicata/Kochia scoparia* Upland and Type 12 – *Puccinellia nuttalliana* Wetland. Open water areas were identified by the number 10 on Figure 3 (Appendix A). The species composition for each community is presented below in descending order of abundance.

Wetland community Type 2 – *Scirpus* spp./*Beckmannia syzigachne* was identified in several isolated wetlands across the site. Saltmarsh bulrush (*Scirpus maritimus*), hard-stem bulrush (*Scirpus acutus*), American sloughgrass (*Beckmannia syzigachne*), muskgrass (*Chara* spp.), green algae and broad-leaf cattail (*Typha latifolia*) dominated the vegetation cover.

Wetland Type 4 – *Agropyron trachycaulum* formed on the edges of several constructed cells. Slender wheatgrass (*Agropyron trachycaulum*), American sloughgrass, and brown algae dominated the vegetation species. Approximately 20 additional grasses and forbs were present at less than five percent cover.

Upland community Type 5 – Agropyron trachycaulum/Elymus triticoides was identified in the northwest corner of the site. Slender wheatgrass, creeping wildrye (Elymus triticoides), smooth brome (Bromus inermis), clasping peppergrass (Lepidium perfoliatum), and kochia (Kochia scoparia) dominated the vegetation cover. Numerous other grasses and forbs were identified within the community at less than five percent cover.

Upland Type 6 – *Kochia scoparia* covered the large sandy areas on the perimeter of the wetland cells that exhibited low vegetation cover. The vegetation was dominated by kochia, coast-blite goose foot (*Chenopodium rubrum*), and clasping peppergrass.

Wetland Type 7 – *Phalaris arundinacea/Salix* spp. was identified in a single narrow strip of wetland located adjacent to the riparian corridor. The vegetation cover was dominated by broad-leaf cattail, hard-stem bulrush, meadow foxtail (*Alopecurus pratensis*), and lesser duckweed (*Lemna minor*). The wetland was planted with willow and other woody shrub species.





Type 8 – *Typha latifolia/Scirpus* spp. Wetland was located within the riparian corridor and the constructed wetland cells. Broad-leaf cattail, hard-stem bulrush, saltmarsh bulrush, and meadow foxtail dominated the community.

Community Type 9 – Beckmannia syzigachne /Glyceria striata was identified in a small, isolated area located next to the riparian corridor in the north half of the site. The species were dominated by American sloughgrass, meadow foxtail, and fowl mannagrass. Canada thistle was present in the community at less than one percent cover.

Type 11 – *Distichlis spicata/Kochia scoparia* was located in a small, isolated upland area near the north boundary. Inland salt grass, kochia, and saltlover (*Halogeton glomeratus*) dominated the vegetation cover.

Wetland Type 12 – *Puccinellia nuttalliana* was identified in an excavated ditch located near the south boundary. Nuttall's alkali grass, muskgrass, and open water dominated the cover.

Open water (10) was located in the large constructed cell in the northwest quarter of the project site. Muskgrass, American sloughgrass, fowl mannagrass, lesser duckweed, hard-stem bulrush, and broad-leaf cattail were observed at less than five percent cover.

Vegetation community data were collected from two 10-foot wide belt transects (Monitoring Forms, Appendix B). The transect data for Transect 1 is summarized in Table 3 and Charts 1 through 4. The transect locations are shown on Figure 2 (Appendix A) and photographs of the transect endpoints are included on pages C-8 and C-9 of Appendix C.

The only community identified on the 150-foot Transect 1 in 2010 was wetland Type 2 – *Scirpus* spp./*Beckmannia syzicachne*, the same community identified in 2009. A photograph of the start of the transect in 2009 and 2010 is shown on page C-7 of Appendix C. Twelve hydrophytic species were observed within the community in 2010, an increase of nine species since 2009. The transect was dominated by aquatic macrophytes, open water, hard-stem bulrush, green algae, lesser duckweed, and American sloughgrass. The estimated cover on the transect increased from 75 to 90 percent. Hydrophytic species encompassed one hundred percent of the transect intervals.

A summary of the data collected on Transect 2 is presented in Table 4. The vegetation data is included on the Monitoring Form (Appendix B). Photographs of the transect end points are shown on page C-8 of Appendix C. One vegetation community, Type 8 – *Typha latifolia/Scirpus* spp., was identified on Transect 2 in 2010. The vegetation cover transitioned from Type 2, dominated by *Scirpus* and *Beckmannia*, in 2009 to Type 8 in 2010. The estimated total cover increased from 75 to 85 percent. Hydrophytic species dominate 100 percent of the transect intervals.





Table 2. Vegetation species identified at Lonepine Wetland Mitigation Site from 2008 to 2010.

SCIENTIFIC NAME	COMMOM NAME	REGION 9 INDICATOR STATUS ¹
Achillea millefolium	yarrow,common	FACU
Agropyron cristatum	crested wheatgrass	NL
Agropyron dasystachyum	wheatgrass,thick-spike	FACU-
Agropyron repens	quackgrass	FACU
Agropyron smithii	wheatgrass,Western	FACU
Agropyron trachycaulum	wheatgrass,slender	FAC
Agrostis alba	redtop	FACW
Algae, brown	algae, brown	NL
Algae, green	algae, green	NL
Alisma plantago-aquatica	water-plantain,broad-leaf	OBL
Alopecurus pratensis	foxtail,meadow	FACW
Amelanchier alnifolia	service-berry,Saskatoon	FACU
Anthemis cotula	mayweed	FACU
Aquatic Macrophytes		NL
Artemisia frigida	prairie sagewort	NL
Aster spp.		NL
Bassia hyssopifolia	smother-weed,five-horn	FACW
Beckmannia syzigachne	sloughgrass,American	OBL
Bidens cernua	beggar-ticks,nodding	FACW+
Brassica spp.		NL
Bromus inermis	smooth brome	NL
Bromus tectorum	cheatgrass	NL
Capsella bursa-pastoris	purse,common shepherd's	FAC-
Cardaria chalepensis	lenspod whitetop	NL
Carex lanuginosa	sedge,wooly	OBL
Carex praegracilis	sedge,clustered field	FACW
Carex stipata	awlfruit sedge	NL
Carex rostrata (utriculata*)	beaked sedge	OBL
Carex vulpinoidea	sedge,fox	OBL
Centaurea maculosa	spotted knapweed	NL
Chara spp.		NL
Chenopodium album	goosefoot,white	FAC
Chenopodium rubrum	goosefoot,coast-blite	FACW+
Chrysothamnus nauseousus	rubber rabbitbrush	NL
Cichorium intybus	chicory	NL
Cirsium arvense	thistle,creeping	FACU+
Cirsium vulgare	thistle,bull	FACU
Crataegus douglasii	hawthorn,Douglas'	FAC
Deschampsia cespitosa	hairgrass,tufted	FACW
Descurainia sophia	common tansymustard	NL
Distichlis spicata	saltgrass,seashore	FAC+
Eleocharis palustris	spikerush,creeping	OBL
Elymus cinereus	wild-rye,basin	NI

¹Region 9 Northwest (Reed 1988). Species identified in 2010 are listed in **bold** type. *Commonly accepted name not included on 1988 list.





Table 2 (Continued). Vegetation species observed at Lonepine Wetland Mitigation Site from 2008 to 2010.

SCIENTIFIC NAME	COMMOM NAME	REGION 9 INDICATOR STATUS ¹
Elymus triticoides	wild-rye,creeping	FAC
Elymus varnensis	tall wheatgrass	NL
Epilobium palustre	willow-herb,marsh	OBL
Festuca spp.		NL
Glyceria grandis	American mannagrass	NL
Glyceria maxima	meadowgrass,reed	OBL
Glyceria striata	grass,fowl manna	OBL
Glycyrrhiza lepidota	licorice,American	FAC+
Grindelia squarrosa	gumweed,curly-cup	FACU
Halogeton glomeratus	saltlover	NL
Hordeum brachyantherum	barley,meadow	FACW
Hordeum jubatum	barley,fox-tail	FAC+
Juncus balticus	rush,Baltic	OBL
Kochia scoparia	summer-cypress,Mexican	FAC
Lactuca serriola	lettuce,prickly	FAC-
Lemna minor	duckweed,lesser	OBL
Lepidium densiflorum	pepper-grass,dense-flower	
Lepidium perfoliatum	pepper-grass,clasping	FACU+
Malva neglecta	common mallow	NL
Matricaria perforata	mayweed,scentless	NI
Medicago lupulina	medic,black	FAC
Medicagoa spp.	,	NL
Melilotus alba	sweetclover, white	FACU
Melilotus officinalis	sweetclover, yellow	FACU
Monolepis nuttalliana	poverty-weed,Nuttall's	FAC-
Phalaris arundinacea	grass,reed canary	FACW
Phleum pratense	timothy	FACU
Poa juncifolia	bluegrass,alkali	FACU+
Poa palustris	bluegrass,fowl	FAC
Poa pratensis	bluegrass,Kentucky	FACU+
Polygonum amphibium	smartweed,water	OBL
Polygonum lapathifolium	willow-weed	FACW+
Polygonum spp.		NL
Polypogon monspeliensis	grass,annual rabbit-foot	FACW+
Populus deltoides	cotton-wood,Eastern	FAC
Populus balsamifera (trichocarpa*)	black cottonwood	FAC
Potentilla fruticosa	cinquefoil,shrubby	FAC-
Puccinellia nuttalliana	grass,Nuttall's alkali	OBL
Ribes aureum	currant,golden	FAC+
Ribes spp.		NL
Rosa spp.		NL
Rosa woodsii	rose,Woods	FACU
Rumex crispus	dock,curly	FACW

¹Region 9 Northwest (Reed 1988). Species identified in 2010 are listed in **bold** type. *Commonly accepted name not included on 1988 list.





Table 2 (Continued). Vegetation species observed at Lonepine Wetland Mitigation Site from 2008 to 2010.

SCIENTIFIC NAME	COMMOM NAME	REGION 9 INDICATOR STATUS ¹	
Salix alba	willow,white	FACW	
Salix amygdaloides	willow,peach-leaf	FACW	
Salix bebbiana	willow,bebb	FACW	
Salix exigua	willow,sandbar	OBL	
Salix lutea	willow,yellow	OBL	
Sarcobatus vermiculatus	greasewood,black	FACU+	
Scirpus acutus	bulrush,hard-stem	OBL	
Scirpus americanus	bulrush,Olney's	OBL	
Scirpus maritimus	bulrush,saltmarsh	OBL	
Scirpus microcarpus	bulrush,small-fruit	OBL	
Sisymbrium altissimum	mustard,tall tumble	FACU-	
Solanum dulcamara	nightshade,climbing	FAC	
Solidago spp.		NL	
Sonchus arvensis	sowthistle,field	FACU+	
Sparganium emersum	burreed,narrow-leaf	OBL	
Suaeda depressa	seepweed,pursh	FACW-	
Symphoricarpos occidentalis	snowberry,Western	NL	
Symphoricarpos spp.		NL	
Taraxacum officinale	dandelion,common	FACU	
Thlaspi arvense	penny-cress,field	NI	
Tragopogon dubius	yellow salsify	NL	
Trifolium repens	clover,white	FACU+	
Typha latifolia	cattail,broad-leaf	OBL	

¹Region 9 Northwest (Reed 1988). Species identified in 2010 are listed in **bold** type.

Table 3. Transect 1 data summary for 2008 to 2010.

Monitoring Year	2008	2009	2010
Transect Length (feet)	150	150	150
Vegetation Community Transitions along Transect	0	0	0
Vegetation Communities along Transect	1	1	1
Hydrophytic Vegetation Communities along Transect	0	1	1
Total Vegetative Species	2	5	14
Total Hydrophytic Species		5	12
Total Upland Species		0	2
Estimated % Total Vegetative Cover	1	75	90
% Transect Length Comprising Hydrophytic Vegetation	0	100	100
% Transect Length Comprising Upland Vegetation		0	0
% Transect Length Comprising Unvegetated Open Water		0	0
% Transect Length Comprising Bare Substrate	0	0	0





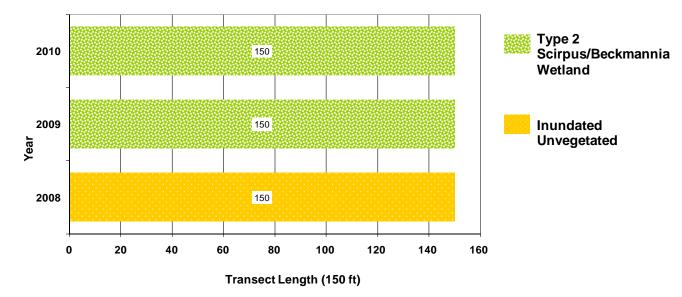
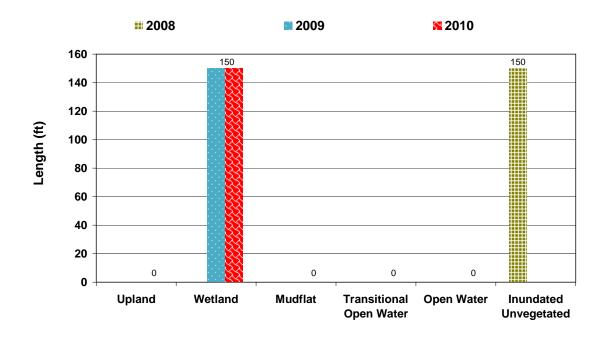


Chart 1. Transect 1 maps showing vegetation types in 2008 to 2010 from the start to end of the transect.



Habitat Type

Chart 2. Length of vegetation communities within Transect 1 from 2008 to 2010.





Table 4. Transect 2 data summary for 2008 to 2010.

Monitoring Year	2008	2009	2010
Transect Length (feet)	300	300	300
Vegetation Community Transitions along Transect	2	2	0
Vegetation Communities along Transect	3	3	1
Hydrophytic Vegetation Communities along Transect	0	2	1
Total Vegetative Species	3	11	11
Total Hydrophytic Species	2	7	11
Total Upland Species	1	4	0
Estimated % Total Vegetative Cover	9	75	85
% Transect Length Comprising Hydrophytic Vegetation	0	93	100
% Transect Length Comprising Upland Vegetation Communities	34	7	0
% Transect Length Comprising Unvegetated Open Water	66	0	0
% Transect Length Comprising Bare Substrate	0	0	0

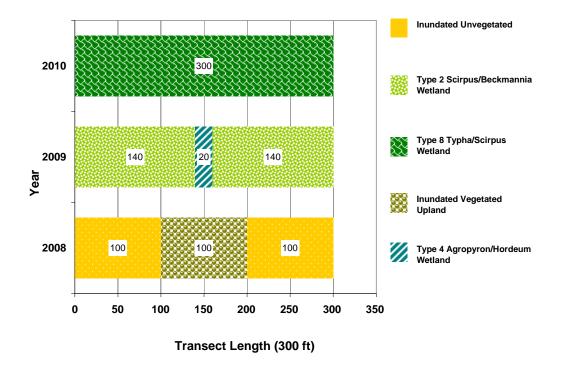


Chart 3. Transect 2 maps showing vegetation types from the start to end of transect in 2008 to 2010.





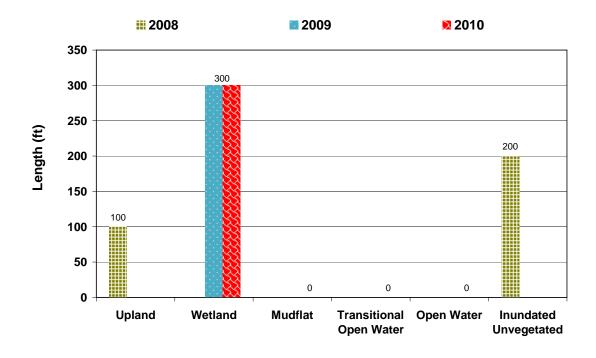


Chart 4. Length of vegetation communities within Transect 2 from 2008 to 2010.

Habitat Type

Infestations of Canada thistle, a Priority 2B noxious weed, were noted on Figure 3 (Appendix A). The infestations were identified primarily in the upland perimeter in the southwest portion of the site and the riparian corridor. The size ranged from less than 0.1 acre to between 0.1 and 1.0 acre. The cover class ranged from low (less than 1 percent) to moderate (5 to 25 percent).

The original revegetation design specified 580 woody plantings (shrubs) and 500 willow sprigs (cuttings). The 285 woody plants identified during 2009 were primarily willows located along the Dry Fork Creek corridor (PBS&J 2009). The root systems of several containerized shrubs were exposed during watering, killing a majority of the containerized species. Approximately 270 dead willow cuttings were replaced along Dry Fork Creek in November 2008. Live woody plantings were observed only along the reconstructed banks of Dry Fork Creek in 2009 and in 2010.

3.3. Soil

The existing soil structure was disturbed during 2008 construction. Two soil samples (SS-1-Cell 1 and SS-2-Cell 2) were collected and analyzed for pH, electrical conductivity (EC), calcium, magnesium, sodium, and sodium adsorption ratio (SAR) in 2008 and 2010. The soil sample collection points are shown on Figure 2 (Appendix A). Results from the 2009 sampling were erroneous, and therefore, were not included in the previous report.





Table 5. Soil sample results measuring pH, EC, Ca, Mg, Na, and SAR.

Year and Soil Sample	pH (s.u.)	Electrical Conductivity (mmhos/cm)	Calcium (meq/L)	Magnesium (meq/L)	Sodium (meq/L)	SAR (unitless)
2003 Baseline-Cell 2	10.6	23.1	0.8	0.22	357	500
2008 SS-1	7.6	4.87	25.5	14.4	28.3	6.34
2008 SS-2	7.7	5.24	26.9	10.5	36.5	8.43
2010 SS-1	7.5	4.3	18.8	6.8	22.4	6.3
2010 SS-2	8	0.87	1.9	1.1	4.6	3.8

The EC levels have decreased measurably at both sample locations since the baseline samples were analyzed in 2003. The EC SS-2 decreased from 5.24 mmhos/cm in 2008 to 0.87 mmhos/cm in 2010, which reflected measured decreases in the levels of calcium, magnesium and sodium from 2008 to 2010. The SAR measured at SS-2 decreased from 8.43 in 2008 to 3.8 in 2010. The decreases in EC, salt ions, and SAR from 2008 to 2010 were less notable at SS-1 than at SS-2. The performance standards for hydric soil specified the following maximum limits for the treated slickspot areas: pH of 10.6, 357 meq/L of sodium, SAR of 500, and EC of 23.1 mmhos/cm. The 2010 soil sample results at both locations were several times lower than the specified limits.

Ten test pits were excavated at the Lonepine monitoring site location. Data points C1D to 5D were located in upland areas and C1W to 5W were located in wetland areas. Test pits C1D, C2D, and C5D revealed dark grayish brown (10YR 4/2), silty clay loam soils with no redox features. Test pit C3D revealed a grayish brown (2.5Y 5/2), silty clay soil with no redox features. Test pit C4D revealed a very dark gray brown (10YR 3/2) silty clay soil with no redox features. Test pits C1W and C2W both revealed a very dark gray (10YR 3/1), silty clay loam soil. Test pit C1W exhibited gleyed soil horizons and low chroma soils. Test pits C4W and C5W both revealed dark gray (10YR 4/1) silty clay soil. The area surrounding the data points located in wetlands was nearly 100 percent inundated.

3.4. Wetland Delineation

Ten data points were used to determine the wetland and upland boundaries shown on Figure 3 (Appendix A). The Wetland Data Forms are included in Appendix B. The total area of aquatic habitat delineated in 2010 encompassed 32.07 acres that included 7.13 acres of pre-existing wetland, 22.61 acres of created emergent wetland, and 2.33 acres of open water. There was an overall increase of 3.2 acres in wetland habitat from 2009 to 2010.





Table 6. Aquatic habitat acreage identified in 2009 and 2010.

AQUATIC HABITAT	2009 (ACRES)	2010 (ACRES)
Total Aquatic Habitat	21.74*	32.07
Open Water		2.33
Pre-existing Wetlands	7.1	7.13
Net Wetlands		22.61

^{*}Open water category not differentiated in 2009.

3.5. Wildlife

The Lonepine wetland complex provides habitat for several wildlife species. The MDT wetland staff observed 15 bird species in spring 2009 and three mammal and four bird species in August 2009 (PBS&J 2009). Animal species observed directly and indirectly in 2010 included frog spp., deer spp. and coyote (*Canis latrans*). Although birds, including waterfowl and shorebirds, were observed during the 2010 monitoring event, no species were recorded on the data form.

Table 7. Wildlife species observed at the Lonepine Wetland Mitigation Site from 2008 to 2010.

COMMON NAME	SCIENTIFIC NAME
AMPI	IIBIAN
Frog spp.	
BI	RD
American White Pelican	Pelecanus erythrorhynchos
American Wigeon	Anas americana
Bald Eagle	Haliaeetus leucocephalus
Bank Swallow	Riparia riparia
Barn Swallow	Hirundo rustica
Black-billed Magpie	Pica hudsonia
Blue-winged Teal	Anas discors
Brown-headed Cowbird	Molothrus ater
Canada Goose	Branta canadensis
Cinnamon Teal	Anas cyanoptera
Common Nighthawk	Chordeiles minor
Great Blue Heron	Ardea herodias
Greater Yellowlegs	Tringa melanoleuca
Green-winged Teal	Anas crecca
Killdeer	Charadrius vociferus
Long-billed Curlew	Numenius americanus
Mallard	Anas platyrhynchos
Northern Shoveler	Anas clypeata
Red-winged Blackbird	Agelaius phoeniceus
Ring-necked Pheasant	Phasianus colchicus
Spotted Sandpiper	Actitis macularius
MAN	IMAL
Coyote	Canis latrans
Deer spp.	
Meadow Vole	Microtus pennsylvanicus

Species identified in 2010 are listed in **bold** type.





3.6. Functional Assessment

The baseline assessment completed in 2003 was assessed using the 1999 MWAM. Functional assessments completed for 2008 to 2010 used the 2008 MWAM. The site was separated into two AAs, the five constructed cells and the Dry Fork Creek riparian area. The respective acreages were 23.6 acres and 8.47 acres. Table 8 summarizes the results of the 2003 (Baseline) and 2009 and 2010 functional assessments. The 2010 assessment forms are included in Appendix B.

The overall wetland category improved for both AAs from Category III wetlands in 2009 to Category II wetlands in 2010. The percent of possible points for the Dry Creek riparian area increased from 56 percent in 2009 to 70 percent in 2010 with point increases in general wildlife habitat, short and long term surface water storage, sediment/nutrient/toxicant removal, groundwater discharge/recharge, and recreation/education potential. The Dry Creek riparian corridor provided documented secondary habitat for the great blue heron and the bald eagle, and incidental habitat for the long-billed curlew and American white pelican.

The constructed wetland cells received 72 percent of the total points possible in 2010, an increase of 15 percentage points from 2009. Ratings were high for general wildlife habitat, short and long term surface water storage, production export/food chain, groundwater discharge/recharge, and recreation/education potential bonus points.

The net acreage gain across the site since 2003 was 24.89 acres. The total functional units achieved at the site in 2010 were 218.62, with a net functional unit gain for both assessment areas of 183.68 compared to the 2003 baseline conditions.

3.7. Photo Documentation

Representative photographs of the project site taken from photo points PP1 through PP12 are shown on pages C-1 through C-9 of Appendix C. The transect end points are shown on pages C-8 and C-9 of Appendix C.

3.8. Maintenance Needs

Infestations of Canada thistle, a Priority 2B noxious weed, were noted on Figure 3 (Appendix A). The infestations were associated primarily with the upland perimeter in the southwest portion of the site and the riparian corridor. The MDT completed weed spraying in spring 2010. Spraying should continue in subsequent years to control noxious weed populations. Although live woody species were observed along the Dry Fork Creek corridor, additional cuttings should be planted to further promote the enhancement of woody shrub cover within the riparian wetland.





Table 8. Summary of the 2003 Baseline and 2009 to 2010 wetland function/value ratings and functional points at the **Lonepine Wetland Mitigation Site.**

Function and Value Parameters from the MDT Montana Wetland Assessment Method	2003 ¹ Baseline Dry Fork Creek	2003 ¹ Baseline Isolated Wetlands	2009 ² Dry Fork Creek	2009 ² Cells 1-5	2010 ² Dry Fork Creek	2010 ² Cells 1-5
Listed/Proposed T&E Species Habitat	Low (0.3)	Low (0.0)	Low (0.0)	Low (0.0)	Low (0.0)	Low (0.0)
MTNHP Species Habitat	Low (0.1)	Low (0.1)	Mod (0.6)	Mod (0.6)	Mod (0.6)	Mod (0.6)
General Wildlife Habitat	Low (0.3)	Low (0.1)	Mod (0.7)	Mod (0.7)	High (0.9)	High (0.9)
General Fish/Aquatic Habitat	Mod (0.4)	NA	Mod (0.4)	NA	Mod (0.5)	NA
Flood Attenuation	Mod (0.5)	NA	Mod (0.6)	NA	Mod (0.6)	NA
Short and Long Term Surface Water Storage	Mod (0.6)	Low (0.3)	Mod (0.6)	High (0.9)	High (0.8)	High (1.0)
Sediment/Nutrient/Toxicant Removal	Mod (0.7)	NA	Mod (0.7)	Mod 0.7	High (1.0)	Mod (0.7)
Sediment/Shoreline Stabilization	Mod (0.6)	NA	Mod (0.6)	Mod (0.6)	Mod (0.7)	Mod (0.7)
Production Export/ Food Chain Support	High (0.8)	Low (0.1)	High (0.8)	Mod (0.7)	High (1.0)	High (1.0)
Groundwater Discharge/Recharge	High (1.0)	High (1.0)	Mod (0.7)	Mod (0.4)	High (1.0)	High (1.0)
Uniqueness	Low (0.2)	Low (0.2)	Mod (0.4)	Mod (0.4)	Mod (0.4)	Mod (0.4)
Recreation/Education Potential (bonus points)	Low (0.1)	Low (0.1)	Mod (0.1)	High (0.15)	High (0.2)	High (0.2)
Actual Points / Possible Points	5.0 / 12	1.9 / 8	6.2 / 11	5.15 / 9	7.7 / 11	6.5 / 9
% of Possible Score Achieved	47%	24%	56%	57%	70%	72%
Overall Category	III	IV	III	III	II	II
Acreage of Assessed Aquatic Habitats within Easement (ac)	6.87	0.31	7.64	21.23	8.47	23.60
Functional Units (acreage x actual points) (f1-)	34.35	0.59	47.37	109.33	65.22	153.40
Net Acreage Gain (ac)	NA		21.69		24.89	
Net Functional Unit Gain (fu)	NA		121.76		183.68	



¹Berglund 1999 ²Berglund and McEldowney 2008

3.9. Current Credit Summary

The total area of aquatic habitat delineated in 2010 encompassed 32.07 acres that included 7.13 acres of pre-existing wetland, 22.61 acres of created emergent wetland and 2.33 acres of open water. The total acreage of aquatic habitat increased 3.2 acres in 2010 as a result of wetland development along the margins of the created wetlands.

Table 9 summarizes the credit acreage estimates for 2009 and 2010. The CSKT and USACE will authorize the final mitigation credits earned at the site. The credit estimate calculated in 2010 totaled 12.98 credit acres based on the CSKT credit ratios, an increase of 0.87 acres since 2009. The USACE 2010 credit estimate was 26.42 credit acres, an increase of 2.59 acres since 2009. The USACE credit for the new Dry Fork channel was reduced by 0.16 acres to account for the lack of survival of the planted woody species. The USACE credit for the riparian intercell swales was also reduced by 0.06 acres to address the lack of planting success for the woody species. The mitigation areas were compared to the performance standards. A majority of the performance standards have been met except for the standard addressing the planted shrub densities. Survival of woody species was significantly less than the 75 percent target. The 2010 net wetland acreage gain (since 2003) was 24.89 acres and the net functional unit gain was 184.86.





Table 9. The 2009 and 2010 Tribal (CSKT) and USACE estimated credit acreages at the Lonepine Wetland Mitigation Site.

PROPOSED FEATURE	2009 DELINEATED ACRES	CSKT CREDIT RATIOS	2009 ESTIMATED CSKT CREDIT ACRES	CSKT CREDIT TARGET (ACRES)	USACE CREDIT RATIOS	USACE 2009 ESTIMATED CREDIT ACRES	USACE CREDIT TARGET	2010 DELINEATED ACRES	2010 ESTIMATED CSKT CREDIT ACRES	USACE 2010 ESTIMATED CREDIT ACRES
Wetland cells, wetland excavation, and designed intercell swales that have developed into wetlands	21.58	1:3.04	7.10	7.02	1:1 (OW limited to 10% of wetlands)	21.58	21.35	23.34	7.68	23.34
New Dry Fork channel and wetland fringe along dam face	0.16	1:1.54	0.10	0.19	1:1	0.16 (not included in total)	0.3	1.54	0.84	1.38*
New Dry Fork Creek channel in pre-existing Wetland 1	0.04	1:1.54	0.03	0.03	1:1.5	0.03	0.03	0.04	0.03	0.03
Dry Fork Creek meander re-activation	0.26	1:1.54	0.17	0.17	1:1.5	0.17	0.17	0.26	0.17	0.17
Protection / grazing removal at pre-existing wetlands	7.13	1:1.54	4.63	4.31	1:5	1.43	1.33	7.13	4.63	1.43
Riparian intercell swales	0.24	1:3.04	0.08	0.14	1:4	0.06 (not included in total)	0.11	0.24	0.08	0.00**
Upland buffer	4.45	None (no planting proposed)	0.00	0.00	1:4 (max. 50-ft width)	0.56	0.56	2.23	0.00	0.56
TOTAL	33.86		12.11	11.86		23.83	23.85	34.78	13.43	26.90





4. REFERENCES

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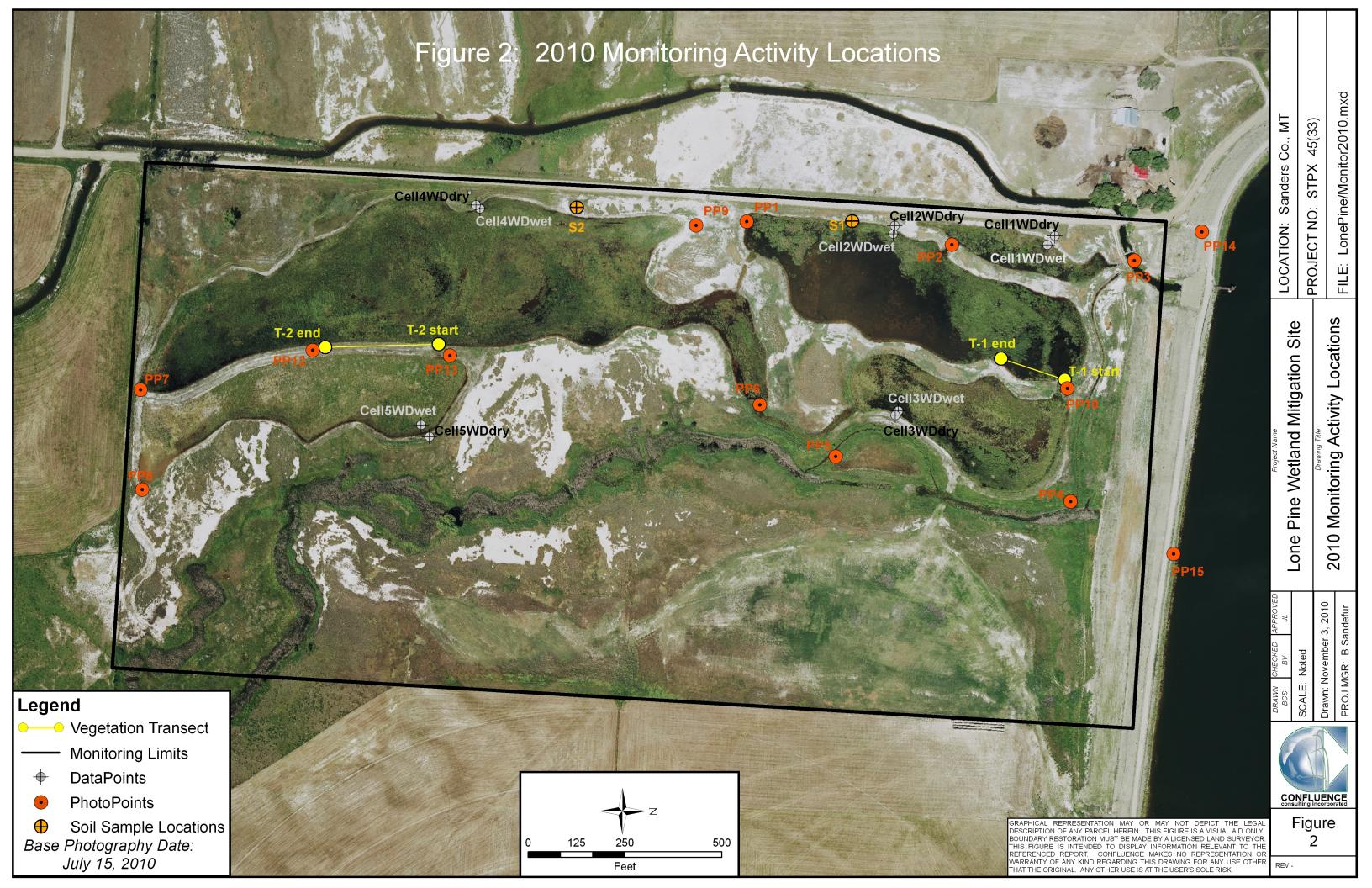
Appendix A

Figures 2 and 3

MDT Wetland Mitigation Monitoring Lonepine Wetland Mitigation Project Flathead Indian Reservation, Montana









Appendix B

2010 MDT Wetland Mitigation Site Monitoring Form 2010 USACE Wetland Determination Data Form 2010 MDT Wetland Assessment Form

MDT Wetland Mitigation Monitoring Lonepine Wetland Mitigation Project Flathead Indian Reservation, Montana





MDT WETLAND MITIGATION SITE MONITORING FORM

Project Site: Lonepine	Assessment Date/Time	8/22/2010				
Person(s) conducting the assessment: s	J. Asebrook, J. Hintz					
Weather: overcast, light rain, warm	Location: LonePine					
MDT District: Missoula	Milepost: 0					
Legal Description: T <u>22N</u> R <u>24W</u> Sect	ion(s)_3					
Initial Evaluation Date: 7/25/2008	Monitoring Year: 3_#Visits in Year: 1					
Size of Evaluation Area: 80 (acres	<u>s)</u>					
Land use surrounding wetland:						
agriculture, reservoir						
	HYDROLOGY					
Surface Water Source: Lower Dry Fork Re	eservoir via the Camas C Canal					
Inundation: Average Depth	:1 (ft) Range of Depths: <u>0-2</u>	(ft)				
Percent of assessment area under inundation	n: <u>40 %</u>					
Depth at emergent vegetation-open water bo	oundary: (ft)					
If assessment area is not inundated then are	· ————	face: Yes				
Other evidence of hydrology on the site (ex.						
ether evidence of flydrenegy of the ene (ex.	ant mice, credien, clamed regetation, et	<u> </u>				
Groundwater Monitoring Wells						
Record depth of water surface below gro	ound					
resort depth of water surface below give	Sulfa					
Additional Activities Checklist:						
Map emergent vegetation-open water	boundary on aerial photograph.					
Observe extent of surface water during each site visit and look for evidence of past surface water						
elevations (drift lines, erosion, vegetation sta	•					
☐ Use GPS to survey groundwater moni	•					
= 200 Cr 2 to survey groundwater morn	to in totaliono, il prodoniti					
Hydrology Notes:						
-,						

VEGETATION COMMUNITIES

Site Lonepine

(Cover Class Codes 0 = < 1%, 1 = 1.5%, 2 = 6.10%, 3 = 11.20%, 4 = 21.50%, 5 = >50%)

Community # 2 Community Type: Scirpus spp. / Beckmannia syzigachne

Species	Cover class	Species	Cover class
Agropyron trachycaulum	0	Algae, green	3
Alisma plantago-aquatica	0	Alopecurus pratensis	0
Beckmannia syzigachne	4	Brassica spp.	0
Chara spp.	3	Cirsium arvense	0
Eleocharis palustris	1	Elymus triticoides	0
Epilobium palustre	0	Glyceria striata	1
Hordeum jubatum	0	Lactuca serriola	0
Lemna minor	1	Phalaris arundinacea	0
Poa juncifolia	0	Puccinellia nuttalliana	0
Rumex crispus	0	Scirpus acutus	4
Scirpus maritimus	4	Typha latifolia	2

Comments:

This wetland community is also similar to Type 8 (now merged version of Types 3 and 8 from 2009). May merge Type 2 with Type 8 in future.

Community # 4 Community Type: Agropyron trachycaulum /

Species	Cover class	Species	Cover class
Agropyron trachycaulum	5	Algae, brown	2
Alopecurus pratensis	1	Beckmannia syzigachne	3
Chara spp.	0	Chenopodium rubrum	0
Cirsium arvense	0	Eleocharis palustris	0
Elymus triticoides	1	Glycyrrhiza lepidota	0
Hordeum jubatum	0	Kochia scoparia	0
Lactuca serriola	0	Lemna minor	0
Lepidium perfoliatum	0	Monolepis nuttalliana	1
Poa juncifolia	0	Polygonum amphibium	0
Rumex crispus	0	Scirpus acutus	0
Scirpus maritimus	1	Sparganium emersum	0
Trifolium repens	0	Typha latifolia	1

Comments:

Community 4 = combination of 2009 communities 1 and 4. Community 1 appears to have become wetter over time and now resembles community 4.

^{*} Indicates accepted spp name not on '88 list.

Community # 5 Community Type: Agropyron trachycaulum / Elymus triticoides

Species	Cover class	Species	Cover class
Achillea millefolium	0	Agropyron trachycaulum	4
Alopecurus pratensis	0	Anthemis cotula	1
Bromus inermis	2	Chenopodium rubrum	1
Cichorium intybus	0	Cirsium arvense	1
Crataegus douglasii	1	Distichlis spicata	0
Elymus triticoides	4	Glycyrrhiza lepidota	0
Grindelia squarrosa	0	Halogeton glomeratus	0
Hordeum jubatum	1	Kochia scoparia	2
Lepidium perfoliatum	2	Medicago lupulina	0
Melilotus alba	0	Melilotus officinalis	0
Monolepis nuttalliana	1	Phalaris arundinacea	0
Poa pratensis	0	Polygonum lapathifolium	0
Populus deltoides	0	Puccinellia nuttalliana	1
Rosa woodsii	0	Rumex crispus	0
Sisymbrium altissimum	0	Sonchus arvensis	1
Suaeda depressa	0	Symphoricarpos occidentali	1
Taraxacum officinale	0	Tragopogon dubius	0

Comments:

This upland community is very weedy but has higher vegetation cover than Type 5 with more weedy grasses. DISSPI and SUE in wetter openings.

Community # 6 Community Type: Kochia scoparia /

Species	Cover class	Species	Cover class
Agropyron repens	1	Agropyron trachycaulum	1
Chenopodium rubrum	2	Cirsium arvense	0
Cirsium vulgare	0	Distichlis spicata	0
Elymus cinereus	0	Elymus triticoides	1
Grindelia squarrosa	0	Halogeton glomeratus	1
Hordeum jubatum	0	Kochia scoparia	5
Lepidium perfoliatum	2	Melilotus alba	0
Puccinellia nuttalliana	0	Rumex crispus	0
Sonchus arvensis	1	Suaeda depressa	0

Comments:

This upland area has open, sandy areas that often have low vegetation cover. A few areas have standing water where DISSPI is present.

Community # 7 Community Type: Phalaris arundinacea / Salix spp.

Species	Cover class	Species	Cover class
Agrostis alba	1	Alopecurus pratensis	3
Aster spp.	0	Beckmannia syzigachne	1
Bromus inermis	0	Chara spp.	4
Cirsium arvense	1	Elymus triticoides	2
Epilobium palustre	0	Glyceria grandis	0
Glyceria striata	1	Hordeum jubatum	0
Phalaris arundinacea	4	Puccinellia nuttalliana	1
Ribes aureum	0	Salix exigua	2
Salix lutea	0	Solanum dulcamara	0
Sonchus arvensis	1	Suaeda depressa	0
Typha latifolia	0		

Comments:

Thin wetland strip that has been planted with willow and other shrub species.

Community # 8 Community Type: Typha latifolia / Scirpus spp.

Species	Cover class	Species	Cover class
Agropyron trachycaulum	1	Alisma plantago-aquatica	0
Alopecurus pratensis	2	Beckmannia syzigachne	1
Bidens cernua	0	Carex lanuginosa	0
Carex stipata	0	Chara spp.	1
Cirsium arvense	1	Distichlis spicata	0
Eleocharis palustris	1	Elymus triticoides	0
Glyceria grandis	1	Hordeum jubatum	1
Juncus balticus	0	Kochia scoparia	0
Lemna minor	2	Lepidium perfoliatum	0
Phalaris arundinacea	1	Poa palustris	0
Polygonum amphibium	0	Polygonum lapathifolium	0
Polygonum spp.	0	Polypogon monspeliensis	0
Puccinellia nuttalliana	0	Rumex crispus	0
Scirpus acutus	3	Scirpus maritimus	1
Sparganium emersum	1	Trifolium repens	0
Typha latifolia	5		

Comments:

This wetland community is now a merged type that combined Type 3 and Type 8 of 2009. The existing Type 2 is becoming very similar to this.

Community # 9 Community Type: Beckmannia syzigachne / Glyceria striata

Species	Cover class	Species	Cover class
Agropyron trachycaulum	0	Alopecurus pratensis	3
Beckmannia syzigachne	4	Bromus inermis	0
Cirsium arvense	0	Deschampsia cespitosa	0
Elymus triticoides	1	Glyceria striata	3
Hordeum jubatum	0	Phalaris arundinacea	1
Phleum pratense	0	Poa juncifolia	1
Poa pratensis	0	Puccinellia nuttalliana	1
Scirpus maritimus	1	Sonchus arvensis	0

Comments:

This is a small wetland type community just south of the planted creek area.

Community # 10 Community Type: open water /

Species	Cover class	Species	Cover class
Alopecurus pratensis	0	Beckmannia syzigachne	1
Chara spp.	2	Elymus triticoides	0
Glyceria striata	1	Hordeum jubatum	0
Lemna minor	1	Open Water	5
Scirpus acutus	1	Scirpus maritimus	0
Typha latifolia	1		

Comments:

This community represents the open water type.

Community # 11 Community Type: Distichlis spicata / Kochia scoparia

Species	Cover class	Species	Cover class
Distichlis spicata	4	Halogeton glomeratus	3
Kochia scoparia	4	Puccinellia nuttalliana	1

Comments:

Very small wet area (lumped with Type 6 in 2009) at north end of property that is clearly dominated by DISSPI and KOCSCO.

Community # 12 Community Type: Puccinellia nuttalliana /

Species	Cover class	Species	Cover class
Agropyron trachycaulum	1	Algae, green	1
Beckmannia syzigachne	0	Chara spp.	2
Elymus triticoides	0	Hordeum jubatum	0
Lemna minor	0	Open Water	2
Puccinellia nuttalliana	4	Scirpus acutus	0
Scirpus maritimus	0	Sparganium emersum	0
Typha latifolia	1		

Comments:

Also small wetland type that occupies man-made undulating outlet channel at the bottome of all the wetland cells

VEGETATION TRANSECTS

Interval Data:			
Ending Station 15	O Community Typ	e: Scirpus spp. / Beckmannia s	yzigachne
Species	Cover class	Species	Cover class
Algae, green	3	Alisma plantago-aquatica	0
Alopecurus pratensis	1	Aquatic Macrophytes	5
Beckmannia syzigachne	1	Eleocharis palustris	1
Glyceria striata	1	Hordeum jubatum	0
Lemna minor	3	Open Water	5
Phalaris arundinacea	0	Puccinellia nuttalliana	0
Scirpus acutus	4	Scirpus maritimus	1
Typha latifolia	2		
Transect Notes:			
150 foot transect. Beginning and end of tr	ansect is close to Ty	ype 6.	

Ending Station 300 **Community Type:** Typha latifolia / Scirpus spp.

Species	Cover class	Species	Cover class
Alisma plantago-aquatica	0	Alopecurus pratensis	2
Beckmannia syzigachne	4	Eleocharis palustris	0
Hordeum jubatum	0	Phalaris arundinacea	0
Puccinellia nuttalliana	0	Rumex crispus	0
Scirpus acutus	1	Scirpus maritimus	3
Typha latifolia	5		

Transect Notes:

300 foot transect. No stake at start - not sure it was lined up exactly. Stake at end had fallen in the water. Put back in as best we could. Transect was initially established to run adjacent to dike area to monitor eroding dike face and prevent 'quick sand issues' during monitoring. East side of line is in upland habitat and west side of line is in wetland habitat. Entered plants on each side of transect.

PLANTED WOODY VEGETATION SURVIVAL

Lonepine

Planting Type	#Planted	#Alive Notes
Amelanchier alnifolia	60	0 Number planted unknown. Heat stress
Artemisia cana	65	 Number planted unknown. Possibly substituted Potentill fruiticosa. Heat stress
Chrysothamnus nauseousus	65	0 Number planted unknown. Heat stress
Crataegus douglasii	60	0 Number planted unknown. Heat stress
Crataegus douglasii	45	0 Number planted unknown. Heat stress
Populus trichocarpa	50	0 Number planted unknown. Heat stress
Ribes aureum	70	2 Living stems in vegetation community 7
Roas woodsii	45	0 Number planted unknown. Heat stress
Salix amygdaloides	60	0 Number planted unknown. Heat stress
Salix lasiandra	60	0 Number planted unknown. Heat stress
Salix spp. cuttings	500	200 Primarily Salix exigua observed along veg com 7

Comments

Live woody vegetation observed along Dry Fork Creek meander in 2010.

Lonepine

HABITAT CODES

AB = Aquatic bed SS = Scrub/Shrub FO = Forested UP = Upland buffer I = Island

 $\mathbf{WM} = \mathbf{Wet} \; \mathbf{meadow} \; \mathbf{MA} = \mathbf{Marsh} \; \mathbf{US} = \mathbf{Unconsolidated} \; \mathbf{shore} \; \mathbf{MF} = \mathbf{Mud} \; \mathbf{Flat} \; \mathbf{OW} = \mathbf{Open} \; \mathbf{Water} \; \mathbf{VS} = \mathbf{VS} \; \mathbf{VS}$

WILDLIFE

Birds					
Were man-made ne	sting structures	installed? _	No		
If yes, type of struct	ure:				_
How many?					
Are the nesting struc	ctures being use	ed?	No		
Do the nesting struc	tures need repa	airs?	No		
Nesting Struct	ure Comments	:			
Species	#Observed	Behavior		Habitat	
Bird Comments				2040	
Although waterfowl, shore noted.	birds, and other av	an species were	e observed during the 2	2010 monitoring, no sp	Decific species were
BEHAVIOR CODES					
BP = One of a breeding pa	ir BD = Breeding dis	splay F = Foragii	ng FO = Flyover L = Lo	pafing N = Nesting	

Mammals and Herptiles

CoyoteNoYesNoDeer spp.2YesYesNoFrog spp1NoNoNo	Species	# Observed	Tracks	Scat	Burrows	Comme
	Coyote		No	Yes	No	
Frog spp 1 No No No	Deer spp.	2	Yes	Yes	No	
	Frog spp	1	No	No	No	

Wildlife Comments:

Lonepine

PHOTOGRAPHS

Take photographs of the following permanent reference points listed in the check list below. Record the direction of the photograph using a compass. When at the site for the first time, establish a permanent reference point by setting a ½ inch rebar or fencepost extending 2-3 feet above ground. Survey the location with a resource grade GPS and mark the location on the aerial photograph.

Photograph Checklist:

- ✓ One photograph for each of the four cardinal directions surrounding the wetland.
- At least one photograph showing upland use surrounding the wetland. If more than one upland exists then take additional photographs.
- At least one photograph showing the buffer surrounding the wetland.
- One photograph from each end of the vegetation transect, showing the transect.

Photo #	Latitude	Longitude	Bearing	Description
1, 2	47.69633478	-114.66879381	90	PP1: view looking east; has stake
0,11,12,13,14,	1 47.6990636	-114.66864109	180	PP3: view looking south
16,17,18,19	47.69960817	-114.6686369	180	PP14: view looking south
20,21,22,23,24	4 47.69881801	-114.66612266	270	PP4: view looking west
25	47.69865096	-114.66735438	180	PP10: looking south along start of Tr1
26			0	PP5: view looking north along Dry Fork Creek
	3 47.69649471	-114.66687025	270	PP6: view looking west
3, 4, 5, 6	47.69633478	-114.66879381	0	PP1: view looking north
32, 33	47.69423705	-114.66730996	0	PP12: looking north along start of Tr2
34	47.69423705	-114.66730996	180	new photo: looking south along start of Tr2
35	47.69339458	-114.66722346	180	PP13: looking south along end of Tr2
38, 39, 40	47.6921782	-114.66561757	315	PP8: view looking northwest
41,42,43,44,4	5 47.6921326	-114.66663999	315	PP7: view looking northwest
46, 47, 48	47.6921782	-114.66561757	90	PP8: view looking east
49,50,51,52,5	3 47.69947473	-114.66554021	180	PP15: view looking south
7	47.6959555	-114.66876791	180	PP9: view looking south
8,9	47.69779617	-114.66873136	90	PP2: view looking east; has a series of stakes

Comments:

ADDITIONAL ITEMS CHECKLIST

	Hydrology
✓ ✓ lines	Map emergent vegetation/open water boundary on aerial photos. Observe extent of surface water. Look for evidence of past surface water elevations (e.g. drift vegetation staining, erosion, etc).
	Photos
Y Y Y Y	One photo from the wetland toward each of the four cardinal directions One photo showing upland use surrounding the wetland. One photo showing the buffer around the wetland One photo from each end of each vegetation transect, toward the transect
	Vegetation
□ Ma	ap vegetation community boundaries
□ Co	mplete Vegetation Transects
	Soils
□As	ssess soils
	Wetland Delineations
V	Delineate wetlands according to applicable USACE protocol (1987 form or
Supp ☑	lement) Delineate wetland – upland boundary onto aerial photograph.
Wetla	and Delineation Comments
	Functional Assessments
✓ forms	Complete and attach full MDT Montana Wetland Assessment Method field
Funct	ional Assessment Comments:

Maintenance

Were man-made nesting structure installed at this site?
If yes, do they need to be repaired? No
If yes, describe the problems below and indicate if any actions were taken to remedy the problems
Were man-made structures built or installed to impound water or control water flow
into or out of the wetland? Yes
If yes, are the structures working properly and in good working order?
If no, describe the problems below.
Control structure in NW corner of site and outlet structures for each cell appear in good condition in 2010.

Project/Site: Lonepine	City/County: Sanders	Sampling Date: 8/22/2010
Applicant/Owner: MDT	- , ,	State: MT Sampling Point: Cell1WDdry
Investigator(s): J. Asebrook, J. Hintz	Section Township Ra	- 0 T 00N - 04N/
		convex, none): flat Slope (%):0
Subregion (LRR): LRR E Lat:		
Soil Map Unit Name: Marklepass, Dry Fork, Whitearth		_ Long Datum
Do Normal Circumstances Exist on this site?		
Is the site significantly disturbed (Atypical Situation)? Yes		
Is the area a potential Problem Area? Yes		
To the district a potential Problem Alexa.		
SUMMARY OF FINDINGS - Attach site map showing	ng sampling point l	ocations, transects, important features, etc.
Hydrophytic Vegetation Present? Yes <u>✓</u> No		
Hydric Soil Present? Yes No	Is the Sampled	
Wetland Hydrology Present? Yes No	within a Wetlan	nd? fes No V
Remarks: This plot is an upland companion plot to Cell 1WD wet. Despite have	ving facultative vegetation	that passes the domiance test, there is no wetland
hydrology or hydric soil. It is not within a wetland.	ing lacalitative vegetation	that passes the definition test, there is no welland
VEGETATION – Use scientific names of plants.		
Absolu	te Dominant Indicator	Dominance Test worksheet:
, , , , , , , , , , , , , , , , , , , ,	er Species? Status	Number of Dominant Species
1		That Are OBL, FACW, or FAC: (A)
2		Total Number of Dominant
3		Species Across All Strata: (B)
4	= Total Cover	Percent of Dominant Species 100
Sapling/Shrub Stratum (Plot size:)	= Total Cover	That Are OBL, FACW, or FAC: (A/B)
1		Dominance Test is >50% ✓
2		
3		
4		
5		
Herb Stratum (Plot size:)	= Total Cover	
1. Kochia scoparia 40		
2. Elymus triticoides 38		
3. Lepidium perfoliatum 10		
T	FACW	
5. Sueda calceoliformis	1 FACW	
6		
7		
8		
10		
11.		
	= Total Cover	
Woody Vine Stratum (Plot size:)		
1		Hydrophytic
2		Vegetation Present? Yes _✓ No
% Bare Ground in Herb Stratum	= Total Cover	
Remarks:		
Vegetation passes Dominance Test. Facultative vegetation	makes this vegetation	hydrophytic.

epth	Matrix		Redox Features		
	Color (moist)	%	Color (moist) % Type ¹	Loc ² Texture	Remarks
2	10YR 5/2	100		Silty Clay Loam	
18	10YR 4/2	100		Silty Clay Loam	
	-				
		letion, RM=F	Reduced Matrix, CS=Covered or Coat	ed Sand Grains. ² Location:	PL=Pore Lining, M=Matrix.
Histosol	I		☐High Organic Conten	t in Surface Layer in Sandy Soi	s
] Histic E	pipedon		Organic Streaking in	Sandy Soils	
			Listed on Local Soils	List	
			Listed on National S	oils List	
			Other (explain in rem	narks)	
_		rs			
Concreti	ions				
konomy Sı	ubgroup:				
nfirm Mapı	ped Type?:			Hydric Soil Pres	ent? Yes 🔲 No 🔽
emarks:				·	
o hydric s	soil criteria present				
YDROLO	GY				
<u>rimary Indi</u>	cators		Secondary Indicators (2 or more	required)	
Innunda	ated		Oxidized Rhizospheres along	Living Roots	
Saturate	ed in upper 12 inche	S	Water-Stained Leaves		
Water N	Marks		Local Soil Survey Data		
Drift Lin	nes		FAC-Neutral Test		
	•	1e	Other (Explain III Nemarks)		
Drainay	je patterns in wetiant	15			
		os 🗆 N	o 🔽 Donth (inches):		
				The state of the s	
Color (moist)					
emarks: No	o wetland hydrolog	y criteria p	resent.		

Project/Site: Lonepine	City/County: Sanders		Sampling	Date:8/22/2	:010		
	State: MT	Sampling	Point: Cell1WDv	wet			
Investigator(s): J. Asebrook, J. Hintz		Section, Township, Range: S 3 T 22N R 24W					
					Slone (%):	0	
		Local relief (concave, convex, none): flat Slope (%): 47.69854803 Long:114.66883144 Datum.NAD					
Soil Map Unit Name: Marklepass, Dry Fork, Whitear	Lai th		_ Long		_ Datum		
Do Normal Circumstances Exist on this site?	Yes_						
	Yes						
Is the site significantly disturbed (Atypical Situation)? Is the area a potential Problem Area?							
is the area a potential Problem Area?	Yes						
SUMMARY OF FINDINGS - Attach site ma	ap showing	g sampling point l	ocations, transec	ts, importa	ant features,	etc.	
Hydrophytic Vegetation Present? Yes <u>✓</u>	No 🗌						
Hydric Soil Present? Yes ✓		Is the Sampled					
Wetland Hydrology Present? Yes	No	within a Wetlar	ıd? Yes <u></u>	No _			
Remarks:							
VEGETATION – Use scientific names of p	lante						
VEGETATION – Ose scientific flames of pr	Absolute	Dominant Indicator	Dominance Test wo	rkehoot:			
Tree Stratum (Plot size:)		Species? Status	Number of Dominant				
1			That Are OBL, FACV		2	(A)	
2			Total Number of Don	ninant	_		
3			Species Across All S		2 ((B)	
4			Percent of Dominant	Species	400		
Sapling/Shrub Stratum (Plot size:)		_ = Total Cover	That Are OBL, FACV		((A/B)	
1			Dominance Test is >	50%			
2			Bollination restrict	0070			
3							
4							
5							
		= Total Cover					
Herb Stratum (Plot size:)	25						
1. Scirpus maritimus 2. Typha latifolia	<u>25</u> 20	OBL OBL					
A sure no une no true a les constitues	30						
Colmona acritica	5	- ✓ FAC OBL					
4. Scirpus acutus 5. Glyceria striata		- OBL					
Beckmannia syzigachne		OBL					
7 Puccinellia nuttalliana		FACW					
8 Hordeum jubatum		FAC					
9 Alopecurus pratensis	1	FACW					
10. Distichlis spicata	1	FAC					
11. green algae	20						
	98	_= Total Cover					
Woody Vine Stratum (Plot size:)							
1			Hydrophytic				
2			Vegetation Present?	res _✓	No		
% Bare Ground in Herb Stratum		_= Total Cover					
Remarks:			l .				
Area is dominated by hydrophytic vegetation - pa	sses Dom T	est. Also present: Ch	ara spp. (5%) and El	ymus triticoi	ides (1%).		

epth nches)	Matr Color (moist		Color (moist)	x Features %	Type ¹	Loc ²	Texture	Remarks
-1	GLEY1 3N	100	Color (moist)		_туре		Silty Clay	Nemarks
-18	10YR 3/1	100						
	101K 3/1						Silty Clay	
ype: C=C	oncentration, D=	Depletion, RM=	Reduced Matrix, C	S=Covered	I or Coate	d Sand G	rains. ² Loc	ation: PL=Pore Lining, M=Matrix.
	Indicators:	· · · · · · · · · · · · · · · · · · ·	,					<u> </u>
Histoso			□Hi	gh Organio	Content	in Surfac	e Layer in Sand	ly Soils
_ Histic E			<u>_</u> 0	rganic Stre	eaking in	Sandy So	ils	
Sulfidic			∐Li	isted on Lo	cal Soils	List		
	Moisture Regime)	∐Li	isted on Na	ational So	ils List		
	ig Conditions or Low-Chroma (`olors	✓ 0	ther (expla	in in rem	arks)		
Concreti		,01013						
xonomy Sı	ubgroup:							
nfirm Man	ned Tune 2.						Hydric Soil	Present? Yes 🔽 No 🗌
p	ped Type?: 🔝							
Remarks: Il soil type ydric soil (es are mapped criteria #3, "So	s that are free	quently ponded fo	or long du	ration or	very long	6 in Cell 1; the	erefore, soils meet the NRCS ing the growing season." Other
emarks: Il soil type ydric soil (ydric soil i iixed, acti	es are mapped criteria #3, "Soi indicators have ve. frigid Calcid	ls that are free not develope	quently ponded fo	or long du ne, mixed	ration or I, supera	very long ctive, frig	6 in Cell 1; the g duration dur gid Typic Natri	erefore, soils meet the NRCS ing the growing season." Other xeralfs. Dry Fork: coarse-silty,
lemarks: Il soil type ydric soil (ydric soil i nixed, acti	es are mapped criteria #3, "Soi indicators have ve, frigid Calcid	ls that are free not develope Haploxerepts	quently ponded fo d. Marklepass: fi	or long du ne, mixed	ration or I, supera	very long ctive, frig	6 in Cell 1; the g duration dur gid Typic Natri	erefore, soils meet the NRCS ing the growing season." Other xeralfs. Dry Fork: coarse-silty,
emarks: Il soil type ydric soil o ydric soil o inixed, activ /DROLO /etland Hy	es are mapped criteria #3, "Soi indicators have ve, frigid Calcid OGY	ls that are free not develope Haploxerepts	quently ponded fo d. Marklepass: fi	or long du ne, mixed	ration or I, supera	very long ctive, frig	6 in Cell 1; the g duration dur gid Typic Natri	erefore, soils meet the NRCS ing the growing season." Other xeralfs. Dry Fork: coarse-silty,
lemarks: Il soil type ydric soil o ydric soil o nixed, acti YDROLO Vetland Hy	es are mapped criteria #3, "Soi indicators have ve. frigid Calcid DGY rdrology Indicat cators	ls that are free not develope Haploxerepts	quently ponded fo d. Marklepass: fi	or long du ne, mixed , siltv, mix	ration or I, supera ked, supe	very long ctive, frig eractive f	6 in Cell 1; the g duration dur gid Typic Natri	erefore, soils meet the NRCS ing the growing season." Other xeralfs. Dry Fork: coarse-silty,
Remarks: Il soil type ydric soil o ydric soil o nixed, acti YDROLO Vetland Hy	es are mapped criteria #3, "Soi indicators have ve. frigid Calcid DGY rdrology Indicat cators	ls that are free not develope Haploxerepts	quently ponded for d. Marklepass: fine whitearth: fine	or long du ne, mixed , siltv, mix	ration or I, supera ked, supera or more re	very long ctive, frig eractive f	6 in Cell 1; the g duration dur gid Typic Natri rigid Typic Na	erefore, soils meet the NRCS ing the growing season." Other xeralfs. Dry Fork: coarse-silty,
lemarks: Il soil type ydric soil o ydric soil o ixed. acti YDROLO Vetland Hy rimary Indi	es are mapped criteria #3, "Soi indicators have ve. frigid Calcid DGY rdrology Indicat cators	s that are free not develope Haploxerepts	quently ponded for d. Marklepass: fine whitearth: fine	or long du ne, mixed , siltv, mix licators (2 e	ration or I, supera ked, supera or more re	very long ctive, frig eractive f	6 in Cell 1; the g duration dur gid Typic Natri rigid Typic Na	erefore, soils meet the NRCS ing the growing season." Other xeralfs. Dry Fork: coarse-silty,
emarks: Il soil type ydric soil o ydric soil o ixed, acti /DROLO /etland Hy rimary Indi // Innunda // Saturate	es are mapped criteria #3, "Soi indicators have ve. friqid Calcid	s that are free not develope Haploxerepts	secondary Ind	or long du ne, mixed , siltv, mix licators (2 e	ration or I, superaked, superaked	very long ctive, frig eractive f	6 in Cell 1; the g duration dur gid Typic Natri rigid Typic Na	erefore, soils meet the NRCS ing the growing season." Other xeralfs. Dry Fork: coarse-silty,
temarks: Il soil type ydric soil o ydric soil o ydric soil o ixed, acti //DROLO //Elland Hy //Inmary Indi // Innunda // Saturate // Water N	es are mapped criteria #3, "Soi indicators have ve. friqid Calcid OGY rdrology Indicat cators ated ed in upper 12 in Marks	s that are free not develope Haploxerepts	secondary Ind	or long du ne, mixec , siltv, mix licators (2 c	ration or I, superaked, superaked	very long ctive, frig eractive f	6 in Cell 1; the g duration dur gid Typic Natri rigid Typic Na	erefore, soils meet the NRCS ing the growing season." Other xeralfs. Dry Fork: coarse-silty,
Remarks: Il soil type ydric soil o ydric soil o ydric soil o hixed, acti YDROLO Vetland Hy Primary Indi V Innunda V Saturato V Water N Drift Lin	es are mapped criteria #3, "Soi indicators have ve. friqid Calcid OGY rdrology Indicat cators ated ed in upper 12 in Marks	s that are free not develope Haploxerepts	secondary Ind Secondary Ind Oxidized F Water-Sta	or long du ne, mixeo , siltv. mix licators (2 Rhizospher ined Leave Survey Da ral Test	ration or I, supera ked. supera or more re res along	very long ctive, frig eractive f	6 in Cell 1; the g duration dur gid Typic Natri rigid Typic Na	erefore, soils meet the NRCS ing the growing season." Other xeralfs. Dry Fork: coarse-silty,
Remarks: All soil type ydric soil of YDROLO YD	es are mapped criteria #3, "Soindicators have ve. friqid Calcid OGY rdrology Indicators ated ed in upper 12 in Marks nes	s that are free not develope Haploxerepts ors:	Secondary Ind Secondary Ind Oxidized F Water-Sta Local Soil	or long du ne, mixeo , siltv. mix licators (2 Rhizospher ined Leave Survey Da ral Test	ration or I, supera ked. supera or more re res along	very long ctive, frig eractive f	6 in Cell 1; the g duration dur gid Typic Natri rigid Typic Na	erefore, soils meet the NRCS ing the growing season." Other xeralfs. Dry Fork: coarse-silty,
Remarks: All soil type ydric soil of YDROLO YD	es are mapped criteria #3, "Soindicators have ve. frigid Calcid PGY rdrology Indicators ated ed in upper 12 in Marks hes ent Deposits	s that are free not develope Haploxerepts ors:	Secondary Ind Secondary Ind Oxidized F Water-Sta Local Soil	or long du ne, mixeo , siltv. mix licators (2 Rhizospher ined Leave Survey Da ral Test	ration or I, supera ked. supera or more re res along	very long ctive, frig eractive f	6 in Cell 1; the g duration dur gid Typic Natri rigid Typic Na	erefore, soils meet the NRCS ing the growing season." Other xeralfs. Dry Fork: coarse-silty,
Remarks: Ill soil type lydric soil of lydric soil	es are mapped criteria #3, "Soindicators have ve. frigid Calcid PGY rdrology Indicators ated ed in upper 12 in Marks hes ent Deposits	s that are free not develope Haploxerepts ors:	Secondary Ind Secondary Ind Oxidized F Water-Sta Local Soil	or long du ne, mixeo , siltv. mix licators (2 Rhizospher ined Leave Survey Da ral Test	ration or I, supera ked. supera or more re res along	very long ctive, frig eractive f	6 in Cell 1; the g duration dur gid Typic Natri rigid Typic Na	erefore, soils meet the NRCS ing the growing season." Other xeralfs. Dry Fork: coarse-silty,
Remarks: All soil type hydric soil of hydric soil o	es are mapped criteria #3, "Soindicators have ve. frigid Calcid PGY rdrology Indicators ated ed in upper 12 in Marks hes ent Deposits	s that are free not develope Haploxerepts ors:	Secondary Ind Secondary Ind Oxidized F Water-Sta Local Soil	or long du ne, mixed , siltv. mix licators (2 Rhizospher ined Leave Survey Da ral Test	ration or I, supera ked. supera or more re res along	very long ctive, frig eractive f	6 in Cell 1; the g duration dur gid Typic Natri rigid Typic Na	erefore, soils meet the NRCS ing the growing season." Other xeralfs. Dry Fork: coarse-silty,
Remarks: All soil type ydric soil of YDROLO YD	es are mapped criteria #3, "Soindicators have ve. frigid Calcid PGY rdrology Indicators ated ed in upper 12 in Marks hes ent Deposits	s that are free not develope Haploxerepts ors:	Secondary Ind Secondary Ind Oxidized F Water-Sta Local Soil	or long du ne, mixed , siltv. mix licators (2 Rhizospher ined Leave Survey Da ral Test	ration or I, supera ked. supera or more re res along	very long ctive, frig eractive f	6 in Cell 1; the g duration dur gid Typic Natri rigid Typic Na	erefore, soils meet the NRCS ing the growing season." Other xeralfs. Dry Fork: coarse-silty,
Remarks: All soil type ydric soil o ydric s	es are mapped criteria #3, "Soindicators have ve. friqid Calcid OGY rdrology Indicators ated ed in upper 12 in Marks hes ent Deposits he patterns in we	s that are free not develope Haploxerepts ors:	Secondary Ind Secondary Ind Oxidized F Water-Sta Local Soil	or long du ne, mixed , siltv. mix licators (2 Rhizospher ined Leave Survey Da ral Test	ration or I, supera ked. supera or more re res along	very long ctive, frig eractive f	6 in Cell 1; the g duration dur gid Typic Natri rigid Typic Na	erefore, soils meet the NRCS ing the growing season." Other xeralfs. Dry Fork: coarse-silty,
Remarks: Ill soil type ydric soil of ydric	es are mapped criteria #3, "Soindicators have ve. friqid Calcid OGY rdrology Indicators ated ed in upper 12 in Marks hes ent Deposits he patterns in we	s that are free not develope Haploxerepts ors: ches	Secondary Ind Secondary Ind Oxidized F Water-Sta Local Soil FAC-Neut Other (Exp	or long du ne, mixeo , siltv. mix licators (2 de Rhizospher ined Leave Survey Da ral Test blain in Rei	or more res along es ata	very long active, frig eractive f	6 in Cell 1; the g duration dur gid Typic Natri rigid Typic Na	erefore, soils meet the NRCS ing the growing season." Other xeralfs. Dry Fork: coarse-silty,
Il soil type ydric soil o ydric soil o ydric soil o ydric soil o inixed. acti /DROLO /etland Hy rimary Indi // Saturate // Water N // Drift Lin // Sedime // Drainag	es are mapped criteria #3, "Soindicators have ve. friqid Calcid OGY rdrology Indicators ated ed in upper 12 in Marks hes ent Deposits he patterns in we rvations:	s that are free not develope Haploxerepts ors: ches lands	Secondary Ind Secondary Ind Oxidized F Water-Sta Local Soil FAC-Neut Other (Exp	or long du ne, mixeo , siltv. mix licators (2 - Rhizospher ined Leave Survey Da ral Test blain in Rei	or more res along es ata	very long active, frig eractive f	6 in Cell 1; the g duration dur gid Typic Natri rigid Typic Na	erefore, soils meet the NRCS ing the growing season." Other xeralfs. Dry Fork: coarse-silty,
Remarks: Ill soil type ydric soil of ydric	es are mapped criteria #3, "Soindicators have ve. friqid Calcid OGY rdrology Indicat cators ated ed in upper 12 in Marks hes ent Deposits he patterns in we rvations: ter Present?	s that are free not develope Haploxerepts ors: ches Yes Yes Yes 1	Secondary Ind Secondary Ind Oxidized F Water-Sta Local Soil FAC-Neut Other (Exp	or long du ne, mixeo , siltv. mix licators (2 de Rhizospher ined Leave Survey Da ral Test blain in Rei	ration or I, superaked, superaked	very long ctive, frigeractive f	6 in Cell 1; the g duration dur gid Typic Natri rigid Typic Na	erefore, soils meet the NRCS ing the growing season." Other xeralfs. Dry Fork: coarse-silty,
Remarks: All soil type hydric soil of hydric soil o	es are mapped criteria #3, "Soindicators have ve, friqid Calcid OGY rdrology Indicators ated ed in upper 12 in Marks hes ent Deposits he patterns in we rvations: ter Present? Present? Present? Present? pillary fringe)	res Yes Yes Yes Yes Yes	Secondary Ind Secondary Ind Oxidized F Water-Sta Local Soil FAC-Neut Other (Exp	or long du ne, mixec . siltv. mix licators (2 - Rhizospher ined Leave Survey Da ral Test blain in Rer aches): aches): aches):	ration or I, supera ced. supera ced. supera ced. supera ces along ces ceta ces ceta ces ceta ceta ceta ceta ceta ceta ceta ceta	very long ctive, frigeractive f	6 in Cell 1; the g duration dur gid Typic Natri rigid Typic Na	erefore, soils meet the NRCS ing the growing season." Other xeralfs. Dry Fork: coarse-silty, trixeralfs.
Remarks: All soil type lydric soil of lydric soil	es are mapped criteria #3, "Soindicators have ve, friqid Calcid OGY rdrology Indicators ated ed in upper 12 in Marks hes ent Deposits he patterns in we rvations: ter Present? Present? Present? Present? pillary fringe)	res Yes Yes Yes Yes Yes	Secondary Ind Secondary Ind Oxidized F Water-Sta Local Soil FAC-Neut Other (Exp	or long du ne, mixec . siltv. mix licators (2 - Rhizospher ined Leave Survey Da ral Test blain in Rer aches): aches): aches):	ration or I, supera ced. supera ced. supera ced. supera ces along ces ceta ces ceta ces ceta ceta ceta ceta ceta ceta ceta ceta	very long ctive, frigeractive f	6 in Cell 1; the g duration dur gid Typic Natri rigid Typic Na	erefore, soils meet the NRCS ing the growing season." Other xeralfs. Dry Fork: coarse-silty, trixeralfs.
Remarks: Il soil type ydric soil of ydric so	es are mapped criteria #3, "Soindicators have ve, friqid Calcid OGY rdrology Indicators ated ed in upper 12 in Marks hes ent Deposits he patterns in we rvations: ter Present? Present? Present? Present? pillary fringe)	res Yes Yes Yes Yes Yes	Secondary Ind Secondary Ind Oxidized F Water-Sta Local Soil FAC-Neut Other (Exp	or long du ne, mixec . siltv. mix licators (2 - Rhizospher ined Leave Survey Da ral Test blain in Rer aches): aches): aches):	ration or I, supera ced. supera ced. supera ced. supera ces along ces ceta ces ceta ces ceta ceta ceta ceta ceta ceta ceta ceta	very long ctive, frigeractive f	6 in Cell 1; the g duration dur gid Typic Natri rigid Typic Na	erefore, soils meet the NRCS ing the growing season." Other xeralfs. Dry Fork: coarse-silty, trixeralfs.

Project/Site: Lonepine	Project/Site: Lonepine City/County: Sande							8/22/20)10
Applicant/Owner: MDT				State: M	 T {	 Sampling	Point:Cel	l2WDd	ry
		Section, Town:	ship. Ran	ne: S	3 T	22N	R	24W	
- ','					lat		Slope	(%):	C
Subregion (LRR): LRR E		,						—	
Soil Map Unit Name: Marklepass, Dry Fork, White									
Do Normal Circumstances Exist on this site?	Yes_								
Is the site significantly disturbed (Atypical Situation)?									
Is the area a potential Problem Area?	Yes								
SUMMARY OF FINDINGS - Attach site n	nap showing	sampling p	point lo	cations, tra	ansects,	import	ant feat	ures,	etc.
Hydrophytic Vegetation Present? Yes ✓									
	No <u></u>		Sampled A a Wetland		Yes	No			
Wetland Hydrology Present? Yes	No <u></u>	WILLIIII	a vvetianc	4:	165				
Remarks: This plot is an upland companion plot to Cell 2WD we	t. It is not within	a wetland.							
VEGETATION – Use scientific names of									
Tree Stratum (Plot size:)	Absolute % Cover	Dominant In Species? S		Dominance					
1				Number of Do That Are OBL				1 (/	A)
2				Total Number	of Domina	nt			
3				Species Acro				1 (E	В)
4				Percent of Do	minant Spe	ecies	10	.0	
Sapling/Shrub Stratum (Plot size:)		_ = Total Cover		That Are OBL	., FACW, or	FAC:	10	<u> </u>	4/B)
1				Dominance T	est is >50%	6 			
2									
3									
4									
5									
Herb Stratum (Plot size:)		_ = Total Cover	·						
1. Kochia scoparia	70	<u> </u>	AC						
2. Lepidium perfoliatum	5	F.	ACU						
3. Elymus triticoides	5		AC						
4. Halogeton glomeratus	10	<u> </u>	<u> </u>						
5									
6									
7		· — — —							
8		· — — —							
9									
10 11		· — — —							
		= Total Cover							
Woody Vine Stratum (Plot size:)		_							
1				Hydrophytic					
2				Vegetation Present?	Yes		No _		
% Bare Ground in Herb Stratum	-	_= Total Cover						_	
Remarks:	. T4								
Vegetation is hydrophytic - does pass the Don	n i est								

B-18

SOIL					Sampling Point: Cell2WDdr
Profile Desc	cription: (Des	cribe to the depth	needed to document the indicate	or or confirm the absence of in	
Depth		atrix	Redox Features		
(inches)	Color (moi		Color (moist) % Type		Remarks
0-4	10YR 3/2	² 100		Silty Clay Loam	
4-20	10YR 4/2	2 100		Silty Clay	
	7				
		D=Depletion, RM=F	Reduced Matrix, CS=Covered or Co	ated Sand Grains. ² Location	: PL=Pore Lining, M=Matrix.
Hydric Soil					
L Histosol				ent in Surface Layer in Sandy Soi	ils
Histic E			Organic Streaking	in Sandy Soils	
Sulfidic			Listed on Local So	ils List	
	Moisture Regir	me	Listed on National	Soils List	
	ig Conditions or Low-Chroma	Colors	Uther (explain in re	emarks)	
		Colors			
Concreti	ions				
Taxonomy Sı	ubaroup:				
Taxonomy of	abgroup.				
Confirm Map	ped Type?: 🗌			Hydric Soil Pres	ent? Yes No
Remarks:					
	soil criteria pre	esent			
No riyano s	on chicha pro	550111.			
HYDROLO)GY				
Wetland Hy	drology Indica	ators:			
Primary Indi			Secondary Indicators (2 or more	e required)	
Innunda			Oxidized Rhizospheres alor		
		Sandana		ig Living Roots	
	ed in upper 12	inches	☐ Water-Stained Leaves		
Water N			Local Soil Survey Data		
Drift Lin			FAC-Neutral Test		
_	ent Deposits		U Other (Explain in Remarks)		
Drainag	je patterns in w	etlands/			
Field Obser	nuntions:				
Surface Wat		Yes 🗌 N	Depth (inches):		
Water Table			Depth (inches):		
Saturation P	resent? pillary fringe)	Yes N	Depth (inches):	Wetland Hydrology Pre	sent? Yes No 🗸
		drology criteria pr	recent		
INC	o welland nyc	arology criteria pi	esent.		

Project/Site: Lonepine	(City/County: Sanders Sampling Date: 8/22/						2010		
Applicant/Owner: MDT		State: MT Sampling Point: Cell2WDw					wet			
		:	Section, Township, Range: S 3 T 22N R 24W							
						ne): flat		Slo	ne (%):	0
Subregion (LRR): LRR E										
Soil Map Unit Name: Marklepass, Dry Fork,					Long					
Do Normal Circumstances Exist on this site?	Yes_					-				
Is the site significantly disturbed (Atypical Situ		_								
Is the area a potential Problem Area?	Yes _	-								
·		-								
SUMMARY OF FINDINGS – Attach	site map show	wing	samplii	ng point lo	ocations	, transec	ts, impor	tant fe	atures	, etc.
	<u>✓</u> No _				_					
	No _			he Sampled hin a Wetlan		Vos V	No			
	V No □			illi a vvelian	ч.	100			<u>-</u>	
Remarks:										
VEGETATION – Use scientific name	es of plants.									
		olute		nt Indicator	Domina	nce Test wo	rksheet:			
Tree Stratum (Plot size:)			Species'	? Status		of Dominant			3	
1					That Are	OBL, FACV	V, or FAC:			(A)
2					The state of the state of the state of	mber of Don			3	(D)
3	-				Species	Across All S	trata:			(B)
7.	-		= Total C	over		of Dominant OBL, FACV			100	(A/B)
Sapling/Shrub Stratum (Plot size:										(A/D)
1					Dominar	nce Test is >	50% ✓			
2										
3				= ====						
4										
5			= Total C							
Herb Stratum (Plot size:)			_ = TOTAL C	over						
1. Typha latifolia		40		OBL						
2. Scirpus acutus		20	<u> </u>	OBL						
3. Scirpus maritimus		20		OBL						
4. Beckmannia syzigachne 5. Alopecurus pratensis		<u>5</u>		OBL FACW						
6. Hordeum jubatum		1		FAC FAC						
7. Polypogon monspeliensis		.		FACW						
8. Elymus triticoides		1		FAC						
9										
10										
11.										
	_		= Total Co	over						
Woody Vine Stratum (Plot size:										
1					Hydroph					
2					Vegetati Present		Yes	No _		
% Bare Ground in Herb Stratum	_		= Total Co	over						
Remarks:					1					
Area is dominated by hydrophytic vegeta	tion - passes Do	m Te	st.							

rofile Desc	cription: (Describ	e to the depth	needed to doo	ument the in	ndicator	or confir	n the absence o	Sampling Point: Cell2VVL
Depth	Matrix	-		dox Features				,
nches)	Color (moist)	%	Color (moist)	%	Type ¹	_Loc ²	Texture	Remarks
-20	10YR 3/1	100	•				Silty Clay	
							-	
	oncentration, D=De	— ——— – epletion, RM=F	Reduced Matrix,	CS=Covered	I or Coate	d Sand G	rains. ² Loca	tion: PL=Pore Lining, M=Matrix.
_	Indicators:							
Histosol							e Layer in Sandy	Soils
_ Histic E _l				Organic Stre		-	ils	
Sulfidic				Listed on Lo	cal Soils	List		
_	Moisture Regime			Listed on Na	ational Sc	ils List		
_	g Conditions		✓	Other (expla	in in rem	arks)		
	or Low-Chroma Co	oiors						
_ Concreti	ons							
xonomy Sı	ubgroup:							
	ped Type?:						Hydric Soil P	resent? Yes <u>V</u> No <u> </u>
emarks:								
ydric soil i		ot developed	l. Marklepass:	fine, mixed	l, supera	ctive, fri	gid Typic Natrix	ng the growing season." Other eralfs. Dry Fork: coarse-silty, rixeralfs.
YDROLO								
_	drology Indicator	s:						
rimary Indi			Secondary I	ndicators (2	or more r	<u>equired)</u>		
⊻ Innunda	ated		Oxidized	d Rhizospher	es along	Living Ro	ots	
✓ Saturate	ed in upper 12 inch	nes	☐ Water-S	tained Leave	s			
✓ Water M			Local So	oil Survey Da	ıta			
Drift Lin				utral Test				
_								
	nt Deposits		Other (E	xplain in Rer	marks)			
Drainag	e patterns in wetla	inds						
ield Obser		Vac 🛂 😘	. D	(in ab = = \):	4	3		
	ter Present?			(inches):				
Vater Table				(inches):		-		
	pillary fringe)			(inches):		_ wet	land Hydrology	Present? Yes 🔽 No 🗌
∍marks: Ce	ell 2 is nearly 100	0% inundated	I. Water range	es from 0-24	1 inches			

Project/Site: Lonepine		City/County: S	anders			Sampling	Date:8/22/20	10
Applicant/Owner: MDT		State	e: MT	Sampling I	Point: Cell3WDdr	 ſy		
		Section, Township, Range: S 3 T 22N R 24W						
Landform (hillslope, terrace, etc.): Flat							Slope (%):	0
Subregion (LRR): LRR E		•			, 		Datum:NAD83	
Soil Map Unit Name: Marklepass, Dry Fork, Whitearth								
Do Normal Circumstances Exist on this site?	V				•			
Is the site significantly disturbed (Atypical Situation)? Yes_								
Is the area a potential Problem Area?	$\overline{}$							
SUMMARY OF FINDINGS – Attach site map sh	nowing	sampling	point loc	cations	, transect	s, importa	ant features, c	etc.
Hydrophytic Vegetation Present? Yes ✓ No								
Hydric Soil Present? Yes No _	<u> </u>		Sampled A		V	Na		
Wetland Hydrology Present? Yes No _		Within	a Wetland	<i>f</i>	res	No _	<u> </u>	
Remarks: This plot is an upland companion plot to Cell 3WD wet. The vis not within a wetland.	/egetatio	n is hydrophyti	c but there	is no evid	dence of wetl	and hydrolog	jy or hydric soil. I	lt
VEGETATION – Use scientific names of plants	i.							
	Absolute	Dominant In Species?	Status		nce Test wo			
1					of Dominant OBL, FACW		3 (A	()
2.							(')
3					mber of Dom Across All St		3 _{(B}	3)
4								,
		_ = Total Cove			of Dominant S OBL, FACW		100(A	\/B)
Sapling/Shrub Stratum (Plot size:)				Dominan	ice Test is >5	5004		
1		· — — –		Dominan	ice rest is >:	00%		
2		· — — –						
4								
5								
		_ = Total Cove	r					
Herb Stratum (Plot size:) 1 Chenopodium rubrum	40	✓ F	ACW					
Thurst striking in a	15	. <u> </u>	AC					
2. Elymus triticoides 3. Kochia scoparia	15		AC					
4 Agropyron trachycaulum	5		AC					
5 Grindelia squarrosa	2	. <u>— —</u> —	ACU					
6. Puccinellia nuttalliana	1	F	ACW					
7. Melilotus alba	1	F	ACU					
8								
9								
10								
11								
Woody Vine Stratum (Plot size:)		_= Total Cover	· -					
1			Ι,	I local manada	4: -			
2				Hydroph Vegetation				
		= Total Cover	.	Present?	? Y	es v	No	
% Bare Ground in Herb Stratum								
Remarks: Vegetation is hydrophytic due to FAC and FACW domi	inant so	ecies. Passe	es Dom Te	est.				
- 1-g-1888 1		- 5.55. 1 4660	.5 _ 0 10	- • • •				

ype: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. Idit	
ype: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ype: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. left of Soil Indicators: Histosol	Remarks
Histosol	
Histosol	
Histosol High Organic Content in Surface Layer in San High Organic Content in Surface Layer in San High Organic Streaking in Sandy Soils Sulfidic Odor Listed on Local Soils List Reducing Conditions Concretions Other (explain in remarks) Other (explain in remarks) Other (explain in remarks)	
Histosol	cation: PL=Pore Lining, M=Matrix.
Histosol Histo Epipedon Organic Streaking in Sandy Soils Sulfidic Odor Aquatic Moisture Regime Reducing Conditions Gleyed or Low-Chroma Colors Concretions Concretions Concretions Concretions Conditions Other (explain in remarks) Hydric Soil BROLOGY etland Hydrology Indicators: imary Indicators Secondary Indicators (2 or more required) Innundated Oxidized Rhizospheres along Living Roots Water-Stained Leaves Water Marks Ordin Lines Sediment Deposits Sediment Deposits Other (Explain in Remarks) Drainage patterns in wetlands Hydric Soil Corganic Streaking in Sandy Soils Listed on Local Soils List Listed on National Soils List Listed on National Soils List Usterd on Local Soils List Listed on National Soils List Listed on National Soils List Listed on National Soils List Other (explain in remarks) Hydric Soil Hydric Soil Mater-Stained Leaves Coxidized Rhizospheres along Living Roots Water-Stained Leaves Coxidized Rhizospheres along Living Roots Water-Stained Leaves Coxidized Rhizospheres along Living Roots Water-Stained Leaves Coxidized Rhizospheres along Living Roots Coxidized Rhizospheres Coxidized Rhizosph	sation. PL-Pore Litting, M-Matrix.
Histic Epipedon Sulfidic Odor Aquatic Moisture Regime Reducing Conditions Gleyed or Low-Chroma Colors Concretions Concretions Concretions Conditions Differ Mapped Type?: Infirm Mapped Type	dy Soils
Sulfidic Odor Aquatic Moisture Regime Reducing Conditions Gleyed or Low-Chroma Colors Concretions Concretions	29 00113
Aquatic Moisture Regime Reducing Conditions Gleyed or Low-Chroma Colors Concretions Advantage Concretions C	
Reducing Conditions Gleyed or Low-Chroma Colors Concretions Concretions Concretio	
Gleyed or Low-Chroma Colors Concretions	
Mydric Soil criteria present. Hydric Soil criteria present.	
Infirm Mapped Type?:	
Infirm Mapped Type?:	
emarks: o hydric soil criteria present. //DROLOGY //etland Hydrology Indicators: rimary Indicators Innundated Oxidized Rhizospheres along Living Roots Saturated in upper 12 inches Water-Stained Leaves Ucal Soil Survey Data FAC-Neutral Test Sediment Deposits Other (Explain in Remarks) ield Observations: urface Water Present? Ves No Depth (inches): vater Table Present? Yes No Depth (inches): aturation Present? Yes No Depth (inches): water Table Present? Yes Depth (inches): Wetland Hydrologence August Present Present? Yes Depth (inches): Wetland Hydrologence Present Present Present? Yes Depth (inches): Wetland Hydrologence Present Prese	
emarks: o hydric soil criteria present. //DROLOGY //etland Hydrology Indicators: rimary Indicators Innundated Innundated Oxidized Rhizospheres along Living Roots Saturated in upper 12 inches Water-Stained Leaves Ucal Soil Survey Data FAC-Neutral Test Sediment Deposits Other (Explain in Remarks) // Other (Explain in Remarks)	Present? Yes No
O hydric soil criteria present.	Tresent: res No
Secondary Indicators Secondary Indicators (2 or more required) Innundated Oxidized Rhizospheres along Living Roots Water-Stained Leaves Uocal Soil Survey Data FAC-Neutral Test Other (Explain in Remarks) Drainage patterns in wetlands Other (Explain in Remarks) Other (Explain in Remark	
Innundated	
□ Innundated □ Oxidized Rhizospheres along Living Roots □ Saturated in upper 12 inches □ Water-Stained Leaves □ Water Marks □ Local Soil Survey Data □ Drift Lines □ FAC-Neutral Test □ Sediment Deposits □ Other (Explain in Remarks) □ Drainage patterns in wetlands ield Observations: urface Water Present? Yes □ No ☑ Depth (inches): □ Water Table Present? Yes □ No ☑ Depth (in	
Saturated in upper 12 inches	
Water Marks ☐ Local Soil Survey Data ☐ Drift Lines ☐ FAC-Neutral Test ☐ Sediment Deposits ☐ Other (Explain in Remarks) ☐ Drainage patterns in wetlands ield Observations: urface Water Present? Yes ☐ No ☑ Depth (inches): ☐ Vater Table Present? Yes ☐ No ☑ Depth (inches): ☐ Vater Table Present? Yes ☐ No ☑ Depth (inches): ☐ Vater Table Present? Yes ☐ No ☑ Depth (inches): ☐ Vetland Hydrological Present? Yes ☐ No ☑ Depth (inches): ☐ Vetland Hydrological Present? Yes ☐ No ☑ Depth (inches): ☐ Vetland Hydrological Present? Yes ☐ No ☑ Depth (inches): ☐ Vetland Hydrological Present? Yes ☐ No ☑ Depth (inches): ☐ Vetland Hydrological Present? Yes ☐ No ☑ Depth (inches): ☐ Vetland Hydrological Present? Yes ☐ No ☑ Depth (inches): ☐ Vetland Hydrological Present? Yes ☐ No ☑ Depth (inches): ☐ Vetland Hydrological Present? Yes ☐ No ☑ Depth (inches): ☐ Vetland Hydrological Present? Yes ☐ No ☑ Depth (inches): ☐ Vetland Hydrological Present? Yes ☐ No ☑ Depth (inches): ☐ Vetland Hydrological Present? Yes ☐ No ☑ Depth (inches): ☐ Vetland Hydrological Present? Yes ☐ No ☑ Depth (inches): ☐ Vetland Hydrological Present? Yes ☐ No ☑ Depth (inches): ☐ Vetland Hydrological Present? Yes ☐ No ☑ Depth (inches): ☐ Vetland Hydrological Present? Yes ☐ No ☑ Depth (inches): ☐ Vetland Hydrological Present? Yes ☐ No ☑ Depth (inches): ☐ Vetland Hydrological Present? Yes ☐ No ☑ Depth (inches): ☐ Yes	
Drift Lines ☐ FAC-Neutral Test ☐ Other (Explain in Remarks) ☐ Drainage patterns in wetlands ☐ Depth (inches): ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	
Sediment Deposits Drainage patterns in wetlands ield Observations: urface Water Present? Ves No Depth (inches): vater Table Present? Yes No Depth (inches): aturation Present? Yes Depth (inches): aturation Present? Yes Depth (inches): wetland Hydrological Present (inches): aturation Present? Yes Depth (inches): wetland Hydrological Present (inches): cludes capillary fringe)	
Drainage patterns in wetlands ield Observations: surface Water Present? Yes □ No ☑ Depth (inches): □ Vater Table Present? Yes □ No ☑ Depth (inc	
ield Observations: surface Water Present? Yes □ No ☑ Depth (inches): □ Vater Table Present? Yes □ No ☑ Depth (inches): □ saturation Present? Yes □ No ☑ Depth (inches): □ Wetland Hydrolog ncludes capillary fringe)	
Vater Table Present? Yes No Depth (inches):	
Surface Water Present? Ves \(\subseteq \) No \(\subseteq \) Depth (inches): \(\subseteq \) Vater Table Present? Yes \(\subseteq \) No \(\subseteq \) Depth (inches): \(\subseteq \) Ves \(\subseteq \) No \(\subseteq \) Depth (inches): \(\subseteq \) Saturation Present? Yes \(\subseteq \) No \(\subseteq \) Depth (inches): \(\subseteq \) Solution (inches): \(\subseteq \) Wetland Hydrology The provided Hydrology (inches) in the provided Hydrology (in	
Vurface Water Present? Ves \(\subseteq \) No \(\subseteq \) Depth (inches): \(\subseteq \) Vater Table Present? Ves \(\subseteq \) No \(\subseteq \) Depth (inches): \(\subseteq \) Vaturation Present? Yes \(\subseteq \) No \(\subseteq \) Depth (inches): \(\subseteq \) No \(\subseteq \) Depth (inches): \(\subseteq \) Wetland Hydrology Includes capillary fringe)	
Vurface Water Present? Ves \(\subseteq \) No \(\subseteq \) Depth (inches): \(\subseteq \) Vater Table Present? Ves \(\subseteq \) No \(\subseteq \) Depth (inches): \(\subseteq \) Vaturation Present? Yes \(\subseteq \) No \(\subseteq \) Depth (inches): \(\subseteq \) No \(\subseteq \) Depth (inches): \(\subseteq \) Wetland Hydrology Includes capillary fringe)	
Surface Water Present? Ves \(\subseteq \) No \(\subseteq \) Depth (inches): \(\subseteq \) Vater Table Present? Yes \(\subseteq \) No \(\subseteq \) Depth (inches): \(\subseteq \) Ves \(\subseteq \) No \(\subseteq \) Depth (inches): \(\subseteq \) Saturation Present? Yes \(\subseteq \) No \(\subseteq \) Depth (inches): \(\subseteq \) Solution (inches): \(\subseteq \) Wetland Hydrology The provided Hydrology (inches) in the provided Hydrology (in	
Vater Table Present? Yes \(\subseteq \text{No \(\subseteq \)} \) Depth (inches): \(\subseteq \) Vaturation Present? Yes \(\subseteq \) No \(\subseteq \) Depth (inches): \(\subseteq \) No \(\subseteq \) Depth (inches): \(\subseteq \) No \(\subseteq \) Depth (inches): \(\subseteq \) Wetland Hydrology	
aturation Present? Yes No V Depth (inches): Wetland Hydrolog	
ncludes capillary fringe)	
ino wettand hydrology chteria are present.	y Present? Yes No _
	y Present? Yes No V
	y Present? Yes No 🗸
	y Present? Yes No <u>V</u>
	y Present? Yes No <u>V</u>

Project/Site: Lonepine		City/County: Sanders Sampling Date: 8/22/201)10		
Applicant/Owner: MDT		State: MT Sampling Point: Cell3WDwet						vet		
Investigator(s): J. Asebrook, J. Hintz			Section, Township, Range: S 3 T 22N R 24W							
Landform (hillslope, terrace, etc.): Flat			Local relie	ef (concave, o	convex, none)	: flat		Slope	(%):	0
					Long:		66689464	4 Datum!	VAD83	í
Soil Map Unit Name: Marklepass, Dry										
Do Normal Circumstances Exist on this		Yes_								
Is the site significantly disturbed (Atypic	cal Situation)?	Yes								
Is the area a potential Problem Area?		Yes								
SUMMARY OF FINDINGS - At	tach site ma	ap showing	g sampli	ng point le	ocations, t	ransects	, impor	tant feat	ures,	etc.
Hydrophytic Vegetation Present?	Yes 🔽	No 🗌								
Hydric Soil Present?	Yes 🔽			he Sampled		🗔				
Wetland Hydrology Present?	Yes 🔽	No	wit	hin a Wetlan	id?	Yes 🗸	No			
Remarks:										
VEGETATION – Use scientific	names of p	lants.								
		Absolute		nt Indicator	Dominance	Test work	sheet:			
Tree Stratum (Plot size:				? Status	Number of I				1 .	
1					That Are Of	BL, FACW,	or FAC:		(/	A)
2					Total Numb				1 ,,	D)
3					Species Ac	ross All Stra	ita:		(E	B)
			= Total C	over	Percent of I That Are Of			10	0 0	A/B)
Sapling/Shrub Stratum (Plot size:)								(/	7/6)
1			- 📙		Dominance	Test is >50)% 🗸			
2										
3				-						
4										
5			= Total C							
Herb Stratum (Plot size:)		_ = 10ta10	ovei						
1. Scirpus acutus		50		OBL						
Beckmannia syzigachne				OBL						
3. Eleocharis palustris		5		OBL						
4. Typha latifolia 5. Alopecurus pratensis				- OBL FACW						
6. Puccinellia nuttalliana		$\frac{1}{2}$		FACW						
7 8			- —							
9.										
10										
11.										
			_= Total C	over						
Woody Vine Stratum (Plot size:										
1					Hydrophyti Vegetation					
2			= Total C	over	Present?		es V	No	_	
% Bare Ground in Herb Stratum			_= Total C	ovei						
Remarks: Area is dominated by hydrophytic v	regetation no	eege Dom Ta	act							
Area is dominated by hydrophytic v	еустаноп - ра	3362 DOIII 16	5 31.							
									_	

nches) -2	Color	Matrix (maiet)	——————————————————————————————————————		Redox Featur	Type ¹	Loc ²	Toveturo	Domarko
	GLEY1	(moist) 10Y	100	Color (moist	<u> </u>	<u></u>	LOC	Texture Silty Clay	Remarks
16	n P	E /4							
16	5Y	5/1						Silty Clay	
	oncentrations Indicators		etion, RM=R	educed Matri	x, CS=Covere	ed or Coate	d Sand G	rains. ² Locati	on: PL=Pore Lining, M=Matrix.
Histosol	I			[⊟High Orgar	ic Content	in Surfac	e Layer in Sandy S	Soils
Histic E	pipedon			[Organic St				
Sulfidic	Odor			[Listed on L		-		
Aquatic	Moisture F	Regime		[Listed on N	National Sc	ils List		
	g Conditio			<u>-</u>	✓ Other (exp				
Gleyed of	or Low-Chi	roma Color	S	,	(-/)		,		
Concreti	ions								
axonomy Sı	ubgroup:								
onfirm Map	ped Type?	::						Hudria Sail Br	esent? Yes 🗹 No 🗌
emarks:	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,							Hydric Soil Pr	esentr res <u> </u>
	es are ma	nned by th	e NRCS a	s "nartially h	vdric" Inur	dated ne	arly 1009	6 in Cell 3: there	fore, soils meet the NRCS
ydric soil i	indicators	have not	developed	Marklepas	s: fine, mixe	ed, supera	ctive, friç		g the growing season." Other ralfs. Dry Fork: coarse-silty, xeralfs.
YDROLO	GY								
Vetland Hy	drology Ir	ndicators:							
rimary Indi	cators			Secondar	y Indicators (2	or more r	equired)		
✓ Innunda	ated			Oxidiz	ed Rhizosphe	eres along	Living Ro	ots	
		r 12 inches		$\overline{}$	-Stained Lea	~	Ū		
Saturate					Soil Survey [
				_	Neutral Test	Jata			
✓ Water N		•		=	(Explain in R	omarka)			
✓ Water M ✓ Drift Lin	-4		_	Other	(Explain in R	emarks)			
✓ Water M ✓ Drift Lin ✓ Sedime	nt Deposit	:							
✓ Water M ✓ Drift Lin ✓ Sedime	nt Deposit e patterns	in wetland	5						
Drift Lin	-	in wetland	5						
✓ Water M ✓ Drift Lin ✓ Sedime	-	in wetland	5						
✓ Water M ✓ Drift Lin ✓ Sedime	-	in wetland	5						
✓ Water M ✓ Drift Lin ☐ Sedime ☐ Drainag	e patterns	in wetland	s						
✓ Water M ✓ Drift Lin ☐ Sedime ☐ Drainag	e patterns			. Dant	h (inches)	7	7		
✓ Water M ✓ Drift Lin ☐ Sedime ☐ Drainag Field Obser Surface Wat	e patterns vations: ter Present	t? Ye	es 🔽 No		th (inches):	_	7		
✓ Water M ✓ Drift Lin ✓ Sedime ✓ Drainag Field Obser Surface Water Table	rvations: ter Present?	†? Ye Ye	es 🗹 No	Dept	th (inches):	(_		June 2 Var III
✓ Water M ✓ Drift Lin ☐ Sedime ☐ Drainag Field Obser Surface Wat Water Table Saturation P	rvations: ter Present? Present?	†? Υε Υε Υε	es 🗹 No	Dept		(_	land Hydrology P	resent? Yes <u>√</u> No <u></u>
✓ Water M ✓ Drift Lin ☐ Sedime ☐ Drainag Field Obser Surface Water Table Saturation P includes ca	rvations: ter Present? Present? pillary fring	†? Ye Ye Ye	es 🗹 No	Dept	th (inches): th (inches):	() Wet	land Hydrology P	resent? Yes <u>√</u> No <u></u>
✓ Water M ✓ Drift Lin ☐ Sedime ☐ Drainag Field Obser Gurface Water Table Saturation P includes ca	rvations: ter Present? Present? pillary fring	†? Ye Ye Ye	es 🗹 No	Dept	th (inches):	() Wet	land Hydrology P	resent? Yes <u></u> ✓ No
✓ Water M ✓ Drift Lin ☐ Sedime ☐ Drainag Field Obser Surface Water Table Saturation Princludes ca	rvations: ter Present? Present? pillary fring	†? Ye Ye Ye	es 🗹 No	Dept	th (inches): th (inches):	() Wet	land Hydrology P	resent? Yes ✓ No □

Project/Site: Lonepine		City/County: Sanders		Sampling Date:	8/22/2010
Applicant/Owner: MDT		, ,	State: MT	Sampling Point:	Cell4WDdry
		Section, Township, Ra		T 22N	R 24W
		Local relief (concave,		Sk	one (%). 0
Subregion (LRR): LRR E					
Soil Map Unit Name: Marklepass, Dry Fork, Whitearth	Lat			Date	and
Do Normal Circumstances Exist on this site?	Yes_				
	Yes □				
, , , , , ,	Yes.□				
SUMMARY OF FINDINGS - Attach site map	showing	ı sampling point l	ocations, transe	cts, important f	eatures, etc.
Hydrophytic Vegetation Present? Yes 1	No		_		
	No 🔽	Is the Sampled within a Wetlan		□ No ✓	
	No <u> </u>	Within a vvenar	163_	140 4	
Remarks: This plot is an upland companion plot to Cell 4WD wet. A soil. It is not within a wetland.	lthough facu	ıltative vegetation is hyd	Irophytic, there is no s	ign of wetland hydrol	ogy or hydric
VEGETATION – Use scientific names of plan	nts.				
T 0 (B)	Absolute		Dominance Test w	vorksheet:	
Tree Stratum (Plot size:)		Species? Status	Number of Domina		2 (^)
1 2			That Are OBL, FAC	,vv, or FAC:	(A)
3			Total Number of Do Species Across All		2 (B)
4					(b)
		_ = Total Cover	Percent of Dominar	nt Species CW, or FAC:	100 _(A/B)
Sapling/Shrub Stratum (Plot size:)				<u> </u>	
1			Dominance Test is	>50%	
2					
3					
4. 5.					
·		= Total Cover			
Herb Stratum (Plot size:)		_			
1. Agropyron repens	60	FAC			
2. Poa pratensis 3. Agropyron trachycaulum		FAC FAC			
Agropyron tracitycation Glycyrrhiza lepidota	$-\frac{10}{2}$	FAC+			
5 Elymus triticoides		FAC			
6 Sonchus arvensis	_ <u> </u>	FACU			
7 Cirsium arvense		FACU			
8					
9					
10					
11					
March Marc Otach are (Blat sings		_= Total Cover			
Woody Vine Stratum (Plot size:)					
1			Hydrophytic Vegetation		
		= Total Cover	Present?	Yes No _	
% Bare Ground in Herb Stratum		_			
Remarks: Facultative vegetation allows vegetation to pass the	e Dom Test	t.			
The state of the s					

SOIL						Sampling Point: Cell4WDdr
Profile Des	cription: (Describe t	o the depth	needed to document the indi	cator or confir	m the absence of ir	
Depth	Matrix		Redox Features			•
(inches)	Color (moist)	%		ype ¹ Loc ²	Texture	Remarks
0-16	10YR 3/2	100			Silty Clay	
					·	
					· ——	
		etion, RM=F	Reduced Matrix, CS=Covered or	Coated Sand G	rains. ² Location	n: PL=Pore Lining, M=Matrix.
Hydric Soil	Indicators:					
Histoso	I		☐High Organic Co	ontent in Surfac	e Layer in Sandy So	pils
Histic E	pipedon		Organic Streak	ing in Sandy So	ils	
☐ Sulfidic	Odor		Listed on Local			
Aquatic	Moisture Regime		Listed on Natio			
Reducin	g Conditions		Other (explain i			
	or Low-Chroma Colors	S	Other (explain)	iii ieiiiaiks)		
Concreti	ions					
Taxonomy Si	ubaroup:					
, axeriering e	ang. cap.					
Confirm Map	ped Type?: 🗌				Hydric Soil Pres	sent? Yes 🔲 No 🔽
Remarks:					1 . ,	
	!					
No riyane s	soil criteria present.					
HYDROLO)GY					
Wetland Hy	drology Indicators:					
Primary Indi	cators		Secondary Indicators (2 or r	nore required)		
Innunda	ated		Oxidized Rhizospheres		ots	
				along Living Ito	Ols	
	ed in upper 12 inches					
Water N	<i>M</i> arks		Local Soil Survey Data			
□ Drift Lin	nes		FAC-Neutral Test			
Sedime	ent Deposits		Other (Explain in Remar	rks)		
	e patterns in wetland:	S		·		
Field Obser	rvations:					
Surface Wat	ter Present? Ye	s 🗌 N	o <u></u> Depth (inches):			
Water Table						
Saturation P		s N	o 🔽 Depth (inches):	Wet	land Hydrology Pro	esent? Yes No
	pillary fringe)					
Nemarks. No	o wetland hydrology	indicators	s present.			
1						
I .						

Project/Site: Lonepine		City/County: Sanders		Sampling	Date:8/22/2	2010
Applicant/Owner: MDT			State: MT	Sampling	Point: Cell4WD	wet
Investigator(s): J. Asebrook, J. Hintz		Section, Township, Rar		T 22N	R 24W	
- 1,1		Local relief (concave, o			Slone (%)	0
Subregion (LRR): LRR E						
Soil Map Unit Name: Marklepass, Dry Fork, Whitearth	_ Lat	-	Long.		_ Datum	
Do Normal Circumstances Exist on this site?	es_【】					
	es 🗌					
• • • • • • • • • • • • • • • • • • • •	$\overline{}$					
is the area a potential Problem Area?	es					
SUMMARY OF FINDINGS - Attach site map s	showing	sampling point lo	ocations, transe	cts, import	ant features	, etc.
Hydrophytic Vegetation Present? Yes ✓ No.	o					
	<u> </u>	Is the Sampled				
Wetland Hydrology Present? Yes Ves No	o	within a Wetlan	d? Yes _	✓ No_		
Remarks:						
VEGETATION – Use scientific names of plan	te					
VEGETATION – Ose scientific fiames of plan	Absolute	Dominant Indicator	Dominance Test w	orkehoot:		
Tree Stratum (Plot size:)		Species? Status	Number of Dominar			
1			That Are OBL, FAC		1	(A)
2			Total Number of Do	minant		
3			Species Across All		1	(B)
4			Percent of Dominar	t Species	400	
Sapling/Shrub Stratum (Plot size:)		_ = Total Cover	That Are OBL, FAC		100	(A/B)
1			Dominance Test is	>50%		
2			Dominance restric	20070		
3.						
4						
5						
		= Total Cover				
Herb Stratum (Plot size:)	00	- FAC				
1. Agropyron trachycaulum 2. Typha latifolia	80	FAC OBL				
2. Typna latifolia 3. Alopecurus pratensis	10	FACW				
FI 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		OBL				
4. Eleocharis palustris 5 Scirpus maritimus	· — <u>'</u>	OBL OBL				
Beckmannia syzigachne	· — · 1	OBL				
7 Scirpus acutus	1	OBL				
8 Cirsium arvense	1	FACU				
9 Monolepis nuttalliana	1	FAC				
10						
11.						
		_= Total Cover				
Woody Vine Stratum (Plot size:)						
1			Hydrophytic			
2			Vegetation Present?	Yes	No	
% Bare Ground in Herb Stratum		_= Total Cover				
Remarks:						
Area is dominated by hydrophytic vegetation - passe	s Dom Te	est and Prev Index.				

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SOIL								Sampling Point: Cell4WDwe
Profile Desc	cription: (Describe	to the dept	h needed to docu	ment the ir	ndicator	or confirm	n the absence	of indicators.)
Depth	Matrix			x Features				,
(inches)	Color (moist)	%	Color (moist)	%	_Type ¹ _	_Loc ²	Texture	Remarks
0-16	10YR 4/1	100	, ,				Silty Clay	
	-					-	1 2	
1							2	
	oncentration, D=Dep	letion, RM=	Reduced Matrix, C	S=Covered	or Coate	ed Sand G	rains. ² Loc	cation: PL=Pore Lining, M=Matrix.
Hydric Soil	Indicators:							
L Histosol			□Hi	gh Organic	Content	in Surfac	e Layer in Sand	dy Soils
Histic E	pipedon			rganic Stre	aking in	Sandy So	ils	
☐ Sulfidic	Odor			isted on Lo		-		
Aquatic	Moisture Regime		=	isted on Na				
	g Conditions		=-					
	or Low-Chroma Colo	rs	V	ther (expla	in in rem	arks)		
Concreti	ons							
Taxonomy Sı	ubgroup:							
Confirm Mon	ped Type?:							
Commit Map	ped Type?.						Hydric Soil	Present? Yes No
Remarks:								
All soil type	s are mapped by t	he NRCS	as "partially hydr	ic". Inund	ated nea	arlv 100%	6 in Cell 4: the	erefore, soils meet the NRCS
								ring the growing season." Other
								ixeralfs. Dry Fork: coarse-silty,
mixed, activ	ve, frigid Calcic Ha	ploxerepts	. Whitearth: fine	, silty, mix	ed. sup	eractive f	rigid Typic Na	atrixeralfs.
HYDROLO	iCV							
Wetland Hy	drology Indicators:							
Primary Indi	cators		Secondary Inc	licators (2 c	or more r	equired)		
✓ Innunda	ated		Ovidized I	Rhizosphere	es along	Livina Ro	nte	
			$\overline{}$		-	Living 100	513	
l <u>—</u>	ed in upper 12 inche	S	=	ined Leave				
✓ Water M	/larks		_	Survey Da	ta			
✓ Drift Lin	ies			ral Test				
Sedime	nt Deposits		Other (Ex	plain in Ren	narks)			
	e patterns in wetland	de						
Drainay	e patterns in wetland	15						
						<u> </u>		
Field Obser	vations:							
Surface Wat	ter Present? Y	es 🔽 N	lo 🔲 Depth (ir	nches):		4_		
Water Table	Present? Y	es 🔽 N	lo Depth (ir	nches):	()		
) \	In and I It advantages	December Van Ma
Saturation P	resent? Y pillary fringe)	es 🔽 N	lo Depth (ir	iches):	`	_ vvet	iand Hydrolog	y Present? Yes 🗸 No 🔃
Tremains. Ce	ell 4 is 100% inund	lated. Wat	er ranges from 0	-24 inches	S.			
- 1								

Project/Site: Lonepine		City/County: Sanders		S	Sampling D	ate:8/2	2/2010
Applicant/Owner: MDT			State: M	T s	ampling P	oint: Cell5W	/Ddry
Investigator(s): J. Asebrook, J. Hintz		Section, Township, Ra	nge S	3 T	22N	R 24\	W
		Local relief (concave,		lat		Slope (%)	ر. C
Subregion (LRR): LRR E							
Soil Map Unit Name: Marklepass, Dry Fork, Whitear			_ Long			Datum.	
Do Normal Circumstances Exist on this site?	Yes 🗸						
Is the site significantly disturbed (Atypical Situation)?	Yes						
Is the area a potential Problem Area?	Yes 🗌						
,	_						
SUMMARY OF FINDINGS – Attach site ma		sampling point l	ocations, tra	ınsects, ı	mporta	nt feature	etc.
Hydrophytic Vegetation Present? Yes		is the Sampled	l Area				
Hydric Soil Present? Wetland Hydrology Present? Yes		within a Wetlar		res	No_	/	
Wetland Hydrology Present? Yes Remarks:	NO						
This plot is an upland companion plot to Cell 5WD wet a	and is not withi	n a wetland.					
VEGETATION – Use scientific names of pl	ants.						
Tron Stratura (Diatoire)	Absolute		Dominance 1	est worksl	neet:		
Tree Stratum (Plot size:)		Species? Status	Number of Do			1	(A)
1 2			That Are Obl	, FACVV, UI	FAC		_ (^)
3			Total Number Species Acros			2	(B)
4.			'				_ (D)
		= Total Cover	Percent of Do That Are OBL			50	(A/B)
Sapling/Shrub Stratum (Plot size:)							_ (,,,,)
1			Dominance T	est is >50%			
2							
3							
4							
5		= Total Cover					
Herb Stratum (Plot size:)		_					
1. Kochia scoparia	30	FAC					
Melilotus officinalis	30	FACU					
3. Agropyron trachycaulum		FAC					
4. Elymus triticoides		FAC					
5. Chenopodium rubrum Bromus inermis	51	FACW NI					
6. Lactuca serriola	<u>_</u>	FACU					
···	<u>. </u>						
8							
9 10							
11							
		= Total Cover					
Woody Vine Stratum (Plot size:)							
1			Hydrophytic				
2			Vegetation Present?	Yes		No 🗸	
% Bare Ground in Herb Stratum		_= Total Cover		,03		<u></u>	
Remarks:							
Vegetation does not passes Dom Test.							

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	cription: (o tne aepth				or confiri	m the absence of	mulcators.)
epth		Matrix			dox Featur	es _ 1	. 2		
nches)		(moist) 3/2		Color (moist)	%_	_Type ¹	_Loc ²	Texture	Remarks
-3 	10YR							Silty Clay Loam	
16	10YR	4/2						Silty Clay Loam	
								·	
Type: C=C			etion, RM=R	educed Matrix,	CS=Cover	ed or Coate	d Sand G	Grains. ² Locati	ion: PL=Pore Lining, M=Matrix.
Histosol					High Organ	nic Content	in Surfac	e Layer in Sandy S	Soils
Histic E	pipedon				Organic St				
Sulfidic	Odor				Listed on I	-	•		
	Moisture F	-			Listed on I	National Sc	ils List		
	g Conditio				Other (exp				
Gleyed o	or Low-Chr	oma Color	S	_	, , , , , ,		,		
Concreti	ons								
axonomy Sı	ubgroup:								
onfirm Map	ped Type?	: 🗌						Hydric Soil Pr	resent? Yes 🔲 No 🗹
Remarks:									
YDROLO		Part are							
Wetland Hy		idicators:		0	l:t //	·	a a visa alV		
Primary Indi				Secondary I					
Innunda					d Rhizosph	_	Living Ro	ots	
Saturate	ed in uppe	r 12 inches			Stained Lea				
Water N	/larks				oil Survey [Data			
Drift Lin	ies			☐ FAC-Ne	eutral Test				
Sedime	nt Deposit	S		Other (E	Explain in R	emarks)			
Drainag	e patterns	in wetland	s						
	vations:								
ield Obser		? Ye	es 🔲 No	Depth	(inches): _		_		
	ter Present		es 🗆 No	Depth	(inches):		_		
Surface Wat		Υe	- 140						
Field Obser Surface Wat Water Table Saturation P (includes ca	Present?	Ye		Depth	(inches): _		Wet	tland Hydrology P	Present? Yes No 🔽
Surface Wat Water Table Saturation P (includes ca	Present? resent? pillary fring	Ye)			(inches):		Wet	tland Hydrology P	Present? Yes No 🗸
Surface Wat Water Table Saturation P (includes ca	Present? resent? pillary fring	Ye)	es 🔲 No		(inches):		Wet	tland Hydrology P	Present? Yes No <u>V</u>
Surface Wat Water Table Saturation P includes ca	Present? resent? pillary fring	Ye)	es 🔲 No		(inches): _		Wet	tland Hydrology P	Present? Yes No <u>✔</u>
urface Wat Vater Table aturation P ncludes ca	Present? resent? pillary fring	Ye)	es 🔲 No		(inches):		Wet	tland Hydrology P	Present? Yes No <u>✓</u>
Surface Wat Vater Table Saturation P includes ca	Present? resent? pillary fring	Ye)	es 🔲 No		(inches): _		Wet	tland Hydrology P	Present? Yes No <u>V</u>
urface Wat Vater Table aturation P ncludes ca	Present? resent? pillary fring	Ye)	es 🔲 No		(inches):		Wet	tland Hydrology P	Present? Yes <u></u> No <u></u> ✓

Project/Site: Lonepine		City/County: San	ders	5	Sampling I	Date:8/22	/2010
Applicant/Owner: MDT			State	MT s	ampling l	oint: Cell5W	Dwet
Investigator(s): J. Asebrook, J. Hintz		Section, Townshi	p. Range: S	T	22N	R 24W	
- ,,		Local relief (cond		e). flat		Slope (%):	0
Subregion (LRR): LRR E							
Soil Map Unit Name: Marklepass, Dry Fork, Whitear	 th		Long			Datum	
Do Normal Circumstances Exist on this site?	Yes_						
Is the site significantly disturbed (Atypical Situation)?	Yes						
Is the area a potential Problem Area?	Yes_						
a the area a perential responsive as	103						
SUMMARY OF FINDINGS - Attach site ma	ap showing	g sampling po	int locations,	transects,	importa	ınt feature	s, etc.
Hydrophytic Vegetation Present? Yes <u>✓</u>	No 🔲						
Hydric Soil Present? Yes			npled Area	V [4	NI-		
Wetland Hydrology Present? Yes	No 🖳	within a V	vetiand?	Yes 🗸	_ NO_		
Remarks:							
VEGETATION – Use scientific names of p	lants.						
	Absolute	Dominant Indic	ator Dominano	ce Test works	neet:		
Tree Stratum (Plot size:)	% Cover	Species? Stat	- Nullibel of	f Dominant Spe		1	
1			That Are C	DBL, FACW, or	FAC: _		(A)
2			THE REAL PROPERTY AND ADDRESS OF THE	ber of Domina		1	
3			Species A	cross All Strata	: _	<u> </u>	(B)
4		_ _ = Total Cover		Dominant Spe		100	(A (D)
Sapling/Shrub Stratum (Plot size:)		_ = Total Cover	I nat Are C	DBL, FACW, or	FAC: _		(A/B)
1			Dominanc	e Test is >50%	· 🗸		
2							
3			<u> </u>				
4			<u> </u>				
5							
Herb Stratum (Plot size:		_ = Total Cover					
1. Agropyron trachycaulum	70	FAC					
2. Typha latifolia	5	OBL					
3. Beckmannia syzigachne	5	OBL	I				
4. Eleocharis palustris		OBL					
5. Scirpus acutus		- OBL					
6. Alopecurus pratensis 7 Scirpus maritimus	$\frac{2}{1}$	- TAC	l				
Rumex crispus		FAC					
brown algae							
10							
11.			<u> </u>				
		= Total Cover					
Woody Vine Stratum (Plot size:)							
1			Hydrophy				
2			Vegetation Present?	n Yes		No	
% Bare Ground in Herb Stratum		_= Total Cover	1,10001111	103			
Remarks:							
Area is dominated by hydrophytic vegetation - pa	sses Dom To	est.					

epth	Matrix		Redox Feature	es		
nches)	Color (moist)	%	Color (moist) %	Type ¹ Loc ²	Texture	Remarks
-1	10YR 2/1	100			Silty Clay	
16	10YR 4/1	100			Silty Clay	
	-					
ype: C=C	oncentration, D=Dep	 bletion, RM=F	Reduced Matrix, CS=Covere	ed or Coated Sand		n: PL=Pore Lining, M=Matrix.
_	Indicators:					
Histosol					ace Layer in Sandy So	oils
Histic Ep			Organic St	reaking in Sandy	Soils	
Sulfidic			Listed on L	ocal Soils List		
	Moisture Regime		Listed on N	lational Soils List		
	g Conditions	are.	✓ Other (exp	lain in remarks)		
Gleyed o	or Low-Chroma Colo ons	115				
axonomy Su	ubgroup:					
nfirm Mapı	ped Type?:				Hydric Soil Pre	sent? Yes 🔽 No 🔲
emarks:					1	
	ndicators have no	t developed	 Marklepass: fine, mixe 	d, superactive,	frigid Typic Natrixer	the growing season." Other alfs. Dry Fork: coarse-silty,
nixed, activ	ve, frigid Calcic Ha	apioxerepts.	. Writtearth. line, Siity, In	inda, daporadav	o maia i ypio i tatiix	orano.
		аріохегеріз.	wintearth. line, Sitty, in	ixou, ouperaouv	o migra Typio Namix	orano.
YDROLO			wintearth. line, Sitty, in	modi ouporaciiv	o maio Typio Natiix	orano.
YDROLO Vetland Hy	GY drology Indicators:		Secondary Indicators (2			orano.
YDROLO Vetland Hydrimary India	OGY drology Indicators: cators		Secondary Indicators (2	or more required)	Statio.
YDROLO Vetland Hydrimary Indic	GY drology Indicators: cators ated		Secondary Indicators (2	or more required)	Statio.
YDROLO Vetland Hydrimary Indic Verimary Indic Verimary Services	IGY drology Indicators: cators ated ed in upper 12 inche		Secondary Indicators (2 Oxidized Rhizosphe Water-Stained Leav	or more required eres along Living F)	Statio.
YDROLO Vetland Hydrimary India V Innunda V Saturate V Water M	GY drology Indicators: cators ated ed in upper 12 inche flarks		Secondary Indicators (2 Oxidized Rhizosphe Water-Stained Leav	or more required eres along Living F)	Stallo.
YDROLO Vetland Hyd Primary India ✓ Innunda ✓ Saturate ✓ Water M ✓ Drift Lin	GY drology Indicators: cators ated ed in upper 12 inche flarks es		Secondary Indicators (2 Oxidized Rhizosphe Water-Stained Leav Local Soil Survey D FAC-Neutral Test	or more required eres along Living F res Jata)	Stallo.
YDROLO Vetland Hydromary Indice ✓ Innunda ✓ Saturate ✓ Water M ✓ Drift Lin — Sedime	drology Indicators: cators ated ed in upper 12 inche farks es nt Deposits	: :s	Secondary Indicators (2 Oxidized Rhizosphe Water-Stained Leav	or more required eres along Living F res Jata)	
YDROLO Vetland Hydromary Indice ✓ Innunda ✓ Saturate ✓ Water M ✓ Drift Lin — Sedime	GY drology Indicators: cators ated ed in upper 12 inche flarks es	: :s	Secondary Indicators (2 Oxidized Rhizosphe Water-Stained Leav Local Soil Survey D FAC-Neutral Test	or more required eres along Living F res Jata)	
YDROLO Wetland Hyd Primary India ✓ Innunda ✓ Saturate ✓ Water M ✓ Drift Lin — Sedime	drology Indicators: cators ated ed in upper 12 inche farks es nt Deposits	: :s	Secondary Indicators (2 Oxidized Rhizosphe Water-Stained Leav Local Soil Survey D FAC-Neutral Test	or more required eres along Living F res Jata)	
YDROLO Wetland Hydromary India Innunda Saturate Water M Drift Lin Sedime	drology Indicators: cators ated ed in upper 12 inche farks es nt Deposits	: :s	Secondary Indicators (2 Oxidized Rhizosphe Water-Stained Leav Local Soil Survey D FAC-Neutral Test	or more required eres along Living F res Jata)	
YDROLO Wetland Hyd Primary India ✓ Innunda ✓ Saturate ✓ Water M ✓ Drift Lin — Sedime	drology Indicators: cators ated ed in upper 12 inche farks es nt Deposits	: :s	Secondary Indicators (2 Oxidized Rhizosphe Water-Stained Leav Local Soil Survey D FAC-Neutral Test	or more required eres along Living F res Jata)	
YDROLO Vetland Hydromary Indice ✓ Innunda ✓ Saturate ✓ Water M ✓ Drift Lin — Sedime	drology Indicators: cators ated ed in upper 12 inche farks es nt Deposits	: :s	Secondary Indicators (2 Oxidized Rhizosphe Water-Stained Leav Local Soil Survey D FAC-Neutral Test	or more required eres along Living F res Jata)	
YDROLO Vetland Hydrimary India ✓ Innunda ✓ Saturate ✓ Water M ✓ Drift Lin ☐ Sedime	drology Indicators: cators ated ed in upper 12 inche farks es nt Deposits e patterns in wetland	: :s	Secondary Indicators (2 Oxidized Rhizosphe Water-Stained Leav Local Soil Survey D FAC-Neutral Test	or more required eres along Living F res Jata)	
YDROLO Vetland Hyv Primary India ✓ Innunda ✓ Saturate ✓ Water M ✓ Drift Lin ☐ Sedimel ☐ Drainage	drology Indicators: cators ated ed in upper 12 inche Marks es nt Deposits e patterns in wetland	ds	Secondary Indicators (2 Oxidized Rhizosphe Water-Stained Leav Local Soil Survey D FAC-Neutral Test	or more required eres along Living R ves Pata emarks))	
YDROLO Vetland Hyderimary India ✓ Innunda ✓ Saturate ✓ Water M ✓ Drift Lin ☐ Sedime ☐ Drainage	drology Indicators: cators ated ed in upper 12 inche flarks es nt Deposits e patterns in wetland	ds ves <u>V</u> N	Secondary Indicators (2 Oxidized Rhizosphe Water-Stained Leav Local Soil Survey D FAC-Neutral Test Other (Explain in Re	eres along Living F ves Pata Pata Pamarks))	
YDROLO Wetland Hyderimary India ✓ Innunda ✓ Saturate ✓ Water M ✓ Drift Lin ☐ Sedime ☐ Drainage Field Obser Surface Wat Water Table Saturation Pincludes cap	drology Indicators: cators ated ed in upper 12 inche flarks es nt Deposits e patterns in wetland	ds /es V N	Secondary Indicators (2 Oxidized Rhizosphe Water-Stained Leav Local Soil Survey D FAC-Neutral Test Other (Explain in Re	eres along Living Fores along Living Fores along Living Fores Data Permarks))	
YDROLO Wetland Hyderimary India ✓ Innunda ✓ Saturate ✓ Water M ✓ Drift Lin ☐ Sedime ☐ Drainage Field Obser Surface Wat Water Table Saturation Pincludes cap	drology Indicators: cators ated ed in upper 12 inche flarks es nt Deposits e patterns in wetland rvations: er Present? Present?	ds /es V N	Secondary Indicators (2 Oxidized Rhizosphe Water-Stained Leav Local Soil Survey D FAC-Neutral Test Other (Explain in Re	eres along Living Fores along Living Fores along Living Fores Data Permarks)	()Roots	
YDROLO Wetland Hyderimary India ✓ Innunda ✓ Saturate ✓ Water M ✓ Drift Lin ☐ Sedimel ☐ Drainage Field Obser Surface Wat Water Table Saturation P	drology Indicators: cators ated ed in upper 12 inche flarks es nt Deposits e patterns in wetland rvations: er Present? Present?	ds /es V N	Secondary Indicators (2 Oxidized Rhizosphe Water-Stained Leav Local Soil Survey D FAC-Neutral Test Other (Explain in Re	eres along Living Fores along Living Fores along Living Fores Data Permarks)	()Roots	
YDROLO Vetland Hyverimary India ✓ Innunda ✓ Saturate ✓ Water M ✓ Drift Lin ☐ Sedime ☐ Drainage Field Obser Surface Water Table Saturation Princludes cap	drology Indicators: cators ated ed in upper 12 inche flarks es nt Deposits e patterns in wetland rvations: er Present? Present?	ds /es V N	Secondary Indicators (2 Oxidized Rhizosphe Water-Stained Leav Local Soil Survey D FAC-Neutral Test Other (Explain in Re	eres along Living Fores along Living Fores along Living Fores Data Permarks)	()Roots	
YDROLO Vetland Hyverimary India ✓ Innunda ✓ Saturate ✓ Water M ✓ Drift Lin ☐ Sedime ☐ Drainage Field Obser Surface Water Table Saturation Princludes cap	drology Indicators: cators ated ed in upper 12 inche flarks es nt Deposits e patterns in wetland rvations: er Present? Present?	ds /es V N	Secondary Indicators (2 Oxidized Rhizosphe Water-Stained Leav Local Soil Survey D FAC-Neutral Test Other (Explain in Re	eres along Living Fores along Living Fores along Living Fores Data Permarks)	()Roots	

MDT Montana Wetland Assessment Form (revised March 2008)

1. Project name	nepine Wetland Mitigation		2. MDT	project#	ST	PX (45)33		Con	trol#	4729
3. Evaluation Date 8/2	22/2010 4. Evaluators	J. Ase	brook, J.	Hintz 5.	Wetl	and/Site# (s)	Lonepine	Mitigatio	n - Ce	lls 1-5
6. Wetland Location(s):	T 22N R 2	4W	Sec1	3	Т	R		Sec2		
Approx Stationing or Mil					servo	ir				
Watershed 3 - Lowe	r Clark Fork Co	ounty	Sande	rs						
7. Evaluating Agency	Confluence for MDT					8. Wetland	size acres			23.6
Purpose of Evaluation						How assess	ed:	Measure	ed e.g.	by GPS
☐ Wetlands potentially	affected by MDT project					9. Assesssr				23.6
☐ Mitigation Wetlands	: pre-construction					(AA) size (ad How assess	•	Measure	d o a	by GDS
✓ Mitigation Wetlands	: post construction					110W assess	cu.	Measure	u e.g.	by 01 0
Other										
10. Classification of We	tland and Aquatic Habitats	in AA								
HGM Class (Brinson)	Class (Cowardin)			er (Coward	in)	Water Re	eaime		% of <i>A</i>	AA
Depressional	Unconsolidated Bottom				,	Permanent/l			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	10
Depressional	Emergent Wetland					Permanent/l	Perennial			70
Depressional	Aquatic Bed]			Permanent/				20
Depressional	Aquatic bed					reilliallellivi	referinal			20
aquatic nuisance vegeta	f AA trix below to determine [circle] a tion species (ANVS) lists)	Mana natura hayed conve roads	ged in pred al state; is n d, logged, ou orted; does u or buildings	Predominantly not grazed, rotherwise	Land mod sele subj	conditions adjacend on to cultivated, but lerately grazed or h ctively logged; or haect to minor clearin roads or buildings; d or ANVS cover is	t to (within 500 may be ayed or as been g; contains noxious	Land cul or logge placeme hydrolog	tivated o d; subjec nt, gradii ical alter density;	r heavily grazed to substantial filling, dearing, or ation; high road or or noxious weed >30%.
AA occurs and is managed in pred grazed, hayed, logged, or otherwith roads or occupied buildings; and it 215%.	se converted; does not contain	lo	w distur	bance	Г	low disturba	ince	mode	erate d	disturbance
	ubject to relatively minor clearing, fill ion; contains few roads or buildings;		modera	ate	m	oderate distu	rbance	hiç	gh dist	urbance
AA cultivated or heavily grazed or substantial fill placement, grading high road or building density; or r >30%.	, clearing, or hydrological alteration;	hig	gh distu	rbance		high disturba	ance	hiç	gh dist	urbance
	turbance, intensity, season vestock grazing and cultivati	•								
ii. Prominent noxious, aq	uatic nuisance, other exoti	c spec	cies:							
	e, some Centaurea maculosa			tive grasses	plus	KOCSCO				
_	ive summary of AA and su					d h., a.a				-ti
AA Includes five cells that I	have moderate to shallow su	rrace v	vater inui	ndation don	ıınate	a by emergent	vegetation	with som	ie aqua	atic vegetation

13. Structural Diversity: (based on number of "Cowardin" vegetated classes present [do not include unvegetated classes], see #10 Initial Is current management preventing (passive) Modified existence of additional vegetated classes? Existing # of "Cowardin" Vegetated Classes in AA Rating R ating >=3 (or 2 if 1 is forested) classes NA NΑ NA Н 2 (or 1 if forested) classes NA NΑ NA М 1 class, but not a monoculture М <NO YES> L 1 class, monoculture (1 species comprises>=90% of total cover) NA NΑ NΑ Comments: wetland vegetation component includes emergent and aquatic bed SECTION PERTAINING to FUNCTIONS_VALUES ASSESSMENT 14A. Habitat for Federally Listed or Proposed Threatened or Endangered Plants or Animals: i. AA is Documented (D) or Suspected (S) to contain (check one based on definitions contained in instructions): Primary or critical habitat (list species) D S D S Secondary habitat (list Species) Incidental habitat (list species) D S ✓ S No usable habitat ii. Rating (use the condusions from i above and the matrix below to arrive at [check] the functional points and rating) doc/secondary Highest Habitat Level doc/primary sus/primary sus/secondary doc/incidental sus/incidental None Functional Points and .9H .8H .7M .3L 1H .1L 0L Rating Sources for documented use observation, MNHP 14B. Habitat for plant or animals rated S1, S2, or S3 by the Montana Natural Heritage Program: (not including species listed in14A above) i. AA is Documented (D) or Suspected (S) to contain (check one based on definitions contained in instructions): Primary or critical habitat (list species) \bigcirc D \bigcirc S Secondary habitat (list Species) ● D ○ S Bald eagle, Great blue heron ● D ○ S Long-billed curlew, American white pelican Incidental habitat (list species) No usable habitat ii. Rating (use the conclusions from i above and the matrix below to arrive at [check] the functional points and rating) Highest Habitat Level doc/primary sus/primary doc/secondary sus/secondary doc/incidental sus/incidental None S1 Species: Functional Points and .7M 1H .8H .6M .2L .1L 0L Rating S2 and S3 Species: Functional Points and .9H .7M .6M .5M .2L 0L .1L Rating

B-35

observation, MNHP

Sources for documented use

																			Mod	erate)	
bstantial (base	d on an	y of the	followin	g [che	eck]):						Minii	mal (b	ased or	n any of	the foll	owing	[check])):				
observations	of abun	dant wil	dlife #s	or hig	h specie	es diver	sity (dur	ing an	y perio	d)	fe	w or n	o wildlif	e obser	vations	during	j peak u	se peri	ods			
abundant wild	dlife sigr	n such a	s scat,	tracks	, nest st	tructure	s, game	trails,	etc.		lit	tle to r	no wildli	e sign								
presence of e	xtreme	y limitin	g habita	at feati	ures not	availat	ole in the	surro	unding	area	s	parse a	adjacen	t upland	d food s	ources	3					
interviews wit	h local	biologist	ts with k	nowle	edge of t	he AA					in	tervie	vs with	ocal bi	ologists	with k	nowledg	ge of the	e AA			
oderate (based	on any o	of the fo	llowing	[check	<]):																	
observations	of scatt	ered wil	dlife gro	oups o	r individ	uals or	relativel	y few s	species	during	peak pe	eriods										
common occu	urrence	of wildli	fe sign :	such a	as scat,	tracks,	nest stru	uctures	s, game	e trails, e	etc.											
adequate adja	acent u	oland fo	od sour	ces																		
interviews wit	h local	biologist	ts with k	nowle	dge of t	he AA																
rom #13. For ther in terms of ermanent/pere erms]) tructural iversity (see	of their	perce	nt com	positi al/int	ion of t	he ÅA	(see #	10).	Abbre	viations	s for su	urface	water sent [s	durati	ons ar	e as f	ollows:	P/P =	itions (
#13) Class cover distribution (all vegetated		Eve	en			Une	ven			Eve	en			Une	ven			Ev	en			
classes) Duration of surface water in ≥ 10% of AA	P/P	S/I	T/E	А	P/P	S/I	T/E	А	P/P	S/I	T/E	А	P/P	S/I	T/E	А	P/P	S/I	T/E	А		
ow disturbance at AA (see #12i)	Е	Е	Е	Н	Е	Е	Н	Н	Е	Н	Н	М	Е	Н	М	М	Е	Н	М	М		
Moderate disturbance at AA see #12i)	н	Н	н	Н	н	Н	Н	М	Н	н	М	М	Н	М	М	L	Н	М	L	L		
High disturbance at AA (see #12i)	М	М	М	L	М	М	L	L	М	М	L	L	М	L	L	L	L	L	L	L		
iii. Rating (i Evidence of v					omia Excep		above	and t	the m		Vildlife		ive at itat fe		ratin			points	and	rating) Low	
Substantial					1E					.9	Н					.8H					.7M	
Moderate					.91	-				.71	М					.5M					.3L	
Minimal					.6N	1				.41	М					.2L					.1L	
Substantial Moderate Minimal Comments 4D. General I ould be used	eagl Fish H	e, Am labita i [i.e.,	erican t Rati fish u	ng:	.9I .6M s increite Pel	easing lican,	and lo	ion if	the A	.7I .4I of deer curlew,	M, water, all spotsed bother b	y fish parrie	of co	e exis	d grean.	.2L at blu tuation	on is "o	∞rred	ctable'	' such h use	.3L .1L by bald	е
estorable due NA here Habitat Qu	and p	roceed	d to 14	1E.)															canal], thei	n check	
Duration of surfac					ermane				,				onal / Ir					<u> </u>	Tem	norary	/ Epheme	ral
Aquatic hiding / re	esting/		Optim			dequate		Pod	or	O	ptimal	Jeas	Adeq			Poor		Optin			equate	iai
escape cover																						

. Habitat Quality and	Known .	Suspec	tearisi	Specie	SINA	A (usen	ialiix lo	arnve a	t [check	the lunct	юпатро	ints and	rating)						
Duration of surface water in AA		Pe	manent /	Perennial	ļ			Se	asonal / l	Intermitten	t		Temporary / Ephemeral						
Aquatic hiding / resting / escape cover	Opt	Optimal		uate	Poor		Optimal		Adequate		Poor		Optimal		Adequate		Poor		
Thermal cover optimal/ suboptimal	0	S	0	S	0	S	0	S	0	S	0	S	0	S	0	S	0	S	
FWP Tier I fish species	1E	.9H	.8H	.7M	.6M	.5M	.9H	.8H	.7M	.6M	.5M	.4M	.7M	.6M	.5M	.4M	.3L	.3L	
FWP Tier II or Native Game fish species	.9H	.8H	.7M	.6M	.5M	.5M	.8H	.7M	.6M	.5M	.4M	.4M	.6M	.5M	.4M	.3L	.2L	.2L	
FWP Tier III or Intro duced Game fish	.8H	.7M	.6M	.5M	.5M	.4M	.7M	.6M	.5M	.4M	.4M	.3L	.5M	.4M	.3L	.2L	.2L	.1L	
FWP Non-Game Tier IV or No fish species	.5M	.5M	.5M	.4M	.4M	.3L	.4M	.4M	.4M	.3L	.3L	.2L	.2L	.2L	.2L	.1L	.1L	.1L	

Sources used for identifying fish so, notentially found in AA:										
Sources used for identifying fish sp. potentially found in AA: ii. Modified Rating (NOTE: Modified score cannot exceed 1 or be less than 0.1) a) Is fish use of the AA significantly reduced by a culvert, dike, or other man-made structure or activity or is the waterbody included on the current final MDEQ list of waterbodies in need of TMDL development with listed "Probable Impaired Uses" including cold or warm water fishery or aquatic life support, or do aquatic nuisance plant or animal species (see Appendix E) occur in fish habitat? Y N ● If yes, reduce score in i above by 0.1: Modified Rating										
b) Does the AA contain a documented spawning area or other critical habitat feature (i.e., sanctuary pool, upwelling area, etc specify in comments) for native fish or introduced game fish? Y N If yes, add 0.1 to the adjusted score in i or iia above: Modifed Rating										
iii. Final Score and Rating: Comments:										
14E. Flood Attenuation: (Applies only to wetlands subject to flooding via in-channel or overbank flow. If wetlands in AA are not flooded from inchannel or overbank flow, click NA here and proceed to 14F.)										
i. Rating (working from top to bottom, use the m	atrix belo	ow to arrive at	[check] the	functional p	ooints a	nd rating)				
Estimated or Calculated Entrenchment (Rosgen 1994, 1996)	Slight	ly entrenched stream type			ly entre ream ty	nched – B pe	Entrencl	hed-A, F, G types	stream	
% of flooded wetland classified as forested and/or scrub/shrub	75%	25-75%	<25%	75%	25-75	% <25%	75%	25-75%	<25%	
AA contains no outlet or restricted outlet	1H	.9Н	.6M	.8H	.7M	.5M	.4M	.3L	.2L	
AA contains unrestricted outlet	.9Н	.8H	.5M	.7M	.6M	.4M	.3L	.2L	.1L	
Slightly Entrenched		Moderately	Entrenched			E	intrenched			٦
ER = >2.2 C stream type D stream type E stream ty	vpe	ER = 1. B strea	41 – 2.2 m tvpe	A st	ream typ		R = 1.0 - 1.4 F stream type		stream type	
	5									
Flood-prone Width Bankfull Depth Flood-prone Width Bankfull Width Flood-prone Width Bankfull Width Bankfull width ii. Are ≥10 acres of wetland in the AA subject to flooding AND are man-made features which may be significantly damaged by floods located within 0.5 mile downstream of the AA (check)? Y N Comments:										
 14F. Short and Long Term Surface Water Storage: (Applies to wetlands that flood or pond from overbank or in-channel flow, precipitation, upland surface flow, or groundwater flow. If no wetlands in the AA are subject to flooding or ponding, dick NA here and proceed to 14G.) i. Rating (Working from top to bottom, use the matrix below to arrive at [check] the functional points and rating. Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; and T/E = temporary/ephemeral [see instructions for 										
further definitions of these terms].) Estimated maximum acre feet of water contained in wetlands within the AA that are subject to periodic		>5 acre feet			1.1 to	o 5 acre feet			≤1 acre foot	
flooding or ponding Duration of surface water at wetlands within the AA	P/P	S/I	T/E	P/P		S/I	T/E	P/P	S/I	T/E
Wetlands in AA flood or pond ≥ 5 out of 10 years	1H	.9H	.8Н	.8Н		.6M	.5M	.4M	.3L	.2L
Wetlands in AA flood or pond < 5 out of 10 years	.9H	.8H	.7M	.7M		.5M	.4M	.3L	.2L	.1L

Comments:	

through influx of surface or ground to 14H.)				applies to wetla tlands in the A					ients, ortoxi nere and pro		
i. Rating (working from top to bot	om, use th	ne matrix b	elow to a	rrive at [check] the function	al points and	d rating [H = high, M	l = moderate	e, or L	
= low]) Sediment, nutrient, and toxicant input levels within AA	AA receives or surrounding land use with potential to deliver levels of sediments, nutrients, or compounds at levels such that other functions are not substantially impaired. Minor sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.					Waterbody on MDEQ list of waterbodies in need of TMDL development for "probable causes" related to sediment, nutrients, or toxicants or AA receives or surrounding land use with potential to deliver high levels of sediments, nutrients, or compounds such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.					
% cover of wetland vegetation in AA Evidence of flooding / ponding in AA		0% No.	Vac	< 70%	Var	≥ 70%	No	Vac	< 70%		
AA contains no or restricted outlet	Yes 1H	.8H	Yes .7M	.5M	Yes .5N		.4M	Yes .3L	.2L	1	
AA contains unrestricted outlet	.9H	.7M	.6M	.4M	.41	1	.3L	.2L	.1L		
Comments:											
14H Sediment/Shoreline Stabilization drainage, or on the shoreline of a stand proceed to 14I.) i. Rating (working from top to bottom, % Cover of wetland streambank or	ing water bo	dy which is	subject to arrive at [wave action. If	14H does not a	apply, click d rating)		r man-made nere and			
shoreline by species with stability ratings of ≥6 (see Appendix F).	Permane	nt / Perennial	Duration o	Seasonal / Inte			ary / Epher	meral			
≥ 65%		1H		.9H			.7M				
35-64%		.7M		.6M			.5M				
< 35%		.3L		.2L			.1L				
Subject to wave acti 14I. Production Export/Food Chair i. Level of Biological Activity (synt General Fish Habitat G	n Support:										
Rating (14D.iii.) E/H	1	М	, in the second	L							
E/H H		Н		M	4						
M H		M		M L	+						
L H		M		L							
ii. Rating (Working from top to bottom, use the matrix below to arrive at [check] the functional points and rating. Factor A = acreage of vegetated wetland component in the AA; Factor B = level of biological activity rating from above (14Li.); Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to duration of surface water in the AA, where P/P, S/I, and T/E are as previously defined, and A = "absent"											
wetland component in the AA; Factor B subsurface outlet; the final three rows p	= level of bi ertain to dur	ological act ation of sur	ivity rating	from above (14I	i.); Factor C =	whether or no	t the AA	contains a su	irface or		
wetland component in the AA; Factor B subsurface outlet; the final three rows p [see instructions for further definitions o A Vegetated component >5 a B High Moderate	= level of bi ertain to dur f these term cres Low	ological act ation of sur s].)	ivity rating face water Vegeta	from above (14I in the AA, where ated component 1-5 a Moderate	i.); Factor C = e P/P, S/I, and eres	whether or no T/E are as pro	vegetated o	contains a su	urface or A = "absent"]	
wetland component in the AA; Factor B subsurface outlet; the final three rows p [see instructions for further definitions of A Vegetated component >5 a	= level of bi ertain to dur f these term cres Low	ological act ation of sur s].)	ivity rating face water Vegeta	from above (14I in the AA, where	i.); Factor C = e P/P, S/I, and	whether or no T/E are as pro	vegetated c	contains a su lefined, and / omponent <1 acr oderate	urface or A = "absent"]	
wetland component in the AA; Factor B subsurface outlet; the final three rows p [see instructions for further definitions of A Vegetated component >5 a B High Moderate C Yes No Yes No	= level of bi ertain to dur f these term cres Low Yes N	ological act ation of sur s].) Ves	vity rating face water Vegeta ligh No	from above (14I in the AA, when the AA, while the	i.i.); Factor C = e P/P, S/I, and eres Low Yes No	whether or no T/E are as pro High Yes No	vegetated converses Market 1 M	contains a su lefined, and // omponent <1 acr oderate No .4M	rrface or A = "absent"] - -	
wetland component in the AA; Factor B subsurface outlet; the final three rows p [see instructions for further definitions o A Vegetated component >5 a B High Moderate C Yes No Yes No P/P 1E .7H .8H .5M	= level of bi ertain to dur f these term cres Low Yes N .6M .4	ological act ation of sur sj.) Yes 9H 8H	vity rating face water Vegetaligh No .6M	from above (14l in the AA, when ted component 1-5 a Moderate Yes No	i.); Factor C = e P/P, S/I, and res Low Yes No .5M .3L	whether or no T/E are as pro High Yes No .8H .6M	vegetated c Vegetated c M Service S	contains a sulefined, and // component <1 acr	rrface or A = "absent" e Low Yes No .3L .2L		

i. Discharge Ind The AA is a slope we Springs or seeps are Vegetation growing of Wetland occurs at the Seeps are present at AA permanently flood Wetland contains an Shallow water table a Other: Occurs at the	etland known or obstanting dorman e toe of a natu the wetland of ded during dro outlet, but no und the site is	nt season/di ural slope edge ought period inlet	ds	Wetl	neable substr and contains am is a know	inlet but no	without un outlet	derlyin		
ii. Rating (use the inform	nation from i	and ii abov	e and the table Duration of sate	ıration at AA	Wetlands FR	OM GROUNE	WATER D	SCHAF	RGE OR V	VITH WATER
		- 1		THAT IS	RECHARGING	G THE GROU	NDWATER	SYSTE	<u> </u>	
Criteria Groundwater Discharge or R	echarge		P/P		S/I		T		١	None
nsufficient Data/Information			1H		.7M		.4M			.1L
						NA				
omments:										
14K. Uniqueness: i. Rating (working from to	op to bottom.	use the ma	atrix below to an	rive at Ichec	k] the functio	nal points a	nd ratina)			
Replacement potential	AA contain or matur wetland o i	ns fen, bog, re (>80 yr-c	, warm springs old) forested ociation listed	AA does not contain previously cited rare types and structural diversity (#13) is high or contains plant association listed as "S2" by			AA o	AA does not contain previously cited rare types or associations and structural diversity (#13) is low-moderate		
Estimated relative abundance (#11)	rare	commo		rare	the MTNHF common	abundant	rare		common	
Low disturbance at AA	1H	.9H	.8H	.8H	.6M	.5M	.5M		.4M	.3L
(#12i) Moderate disturbance at	.9H	.9H	.7M	.7M	.5M	.5IVI	.3M	-	.4IVI	.3L
AA (#12i) High disturbance at AA (#12i)	.8H	.7H	.6M	.6M	.4M	.3L	.3L		.3L	.1L
14L. Recreation/Education i. Is the AA a known or potential proceed to the company of the compan	otential rec./ o the overall	/ed. site: (d summary a	check) Y and rating page)	N O	(if 'Yes' con	tinue with th	e evaluati	on; if 'l		
Other iii. Rating (use the matrix	below to arri	ive at [ched	ck] the functiona	l points and	rating)	·				
Known or Potential Recreation Public ownership or public e			olic access (no pe	rmission req	uired)			Knov		otential .15H
Private ownership with gener	ral public acce	ess (no pern	nission required)					.15	1	.1M
Private or public ownership v	without genera	al public acc	cess, or requiring	permission f	or public acce	ess		.11	М	.05L
omments:										
known birdwatching, hur	nting									
eneral Site Notes										

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units: (Actual Points x Estimated AA Acreage)	Indicate the four most prominent functions with an asterisk (*)
A. Listed/Proposed T&E Species Habitat	L	0	1	0	
B. MT Natural Heritage Program Species Habitat	М	.6	1	14.16	✓
C. General Wildlife Habitat	Н	.9	1	21.24	✓
D. General Fish Habitat	NA	0	0	0	
E. Flood Attenuation	NA	0	0	0	
F. Short and Long Term Surface Water Storage	Н	1	1	23.6	V
G. Sediment/Nutrient/Toxicant Removal	М	.7	1	16.52	
H. Sediment/Shoreline Stabilization	М	.7	1	16.52	
I. Production Export/Food Chain Support	Е	1	1	23.6	
J. Groundwater Discharge/Recharge	Н	1	1	23.6	✓
K. Uniqueness	М	.4	1	9.44	
L. Recreation/Education Potential (bonus points)	Н	.2	NA	4.72	
Totals:		6.5	9	153.4	
Percent of Possible Score			72.22 %		

Category I Wetland: (must satisfy one of the following criteria; otherwise go to Category II) Score of 1 functional point for Listed/Proposed Threatened or Endangered Species; or Score of 1 functional point for Uniqueness; or Score of 1 functional point for Flood Attenuation and answer to Question 14E.ii is "yes"; or Percent of possible score > 80% (round to nearest whole #).
Category II Wetland: (Criteria for Category I not satisfied and meets any one of the following criteria; otherwise go to Category IV) Score of 1 functional point for MT Natural Heritage Program Species Habitat; or Score of .9 or 1 functional point for General Wildlife Habitat; or Score of .9 or 1 functional point for General Fish Habitat; or "High" to "Exceptional" ratings for both General Wildlife Habitat and General Fish/Aquatic Habitat; or Score of .9 functional point for Uniqueness; or Percent of possible score > 65% (round to nearest whole #).
Category III Wetland: (Criteria for Categories I, II, or IV not satisfied)
Category IV Wetland: (Criteria for Categories I or II are not satisfied and all of the following criteria are met; otherwise go to Category III) "Low" rating for Uniqueness; and Vegetated wetland component < 1 acre (do not include upland vegetated buffer); and Percent of possible score < 35% (round to nearest whole #).

OVERALL ANALYSIS AREA RATING: (check appropriate category based on the criteria outlined above)

1	II	Ш	IV

MDT Montana Wetland Assessment Form (revised March 2008)

1. Project name Lonepine Wetland Mitigation	2. MDT project#	STPX (45)33	Cor	4729		
3. Evaluation Date 8/22/2010 4. Evaluators	J. Asebrook, J. Hintz 5.	Wetland/Site# (s)	Lonepine Mitigati	on Dry Fork Creek		
6. Wetland Location(s): T 22N R 2	4W Sec1 3	T	Sec2			
Approx Stationing or Mileposts East of Lonepine	, below Lower Dry Fork Res	servoir				
Watershed 3 - Lower Clark Fork Co	ounty Sanders					
7. Evaluating Agency Confluence for MDT		8. Wetland si	ze acres	8.47		
Purpose of Evaluation		How assessed	d: Measur	ed e.g. by GPS		
☐ Wetlands potentially affected by MDT project		9. Assesssm	ent area	8.47		
☐ Mitigation Wetlands: pre-construction		(AA) size (acr				
✓ Mitigation Wetlands: post construction		How assessed	d: Measur	ed e.g. by GPS		
Other						
10. Classification of Wetland and Aquatic Habitats	in AA					
HGM Class (Brinson) Class (Cowardin)	Modifier (Cowardi	n) Water Reg	jime	% of AA		
Riverine Unconsolidated Bottom		Permanent/Pe	erennial	25		
Riverine Emergent Wetland		Permanent/Pe	erennial	70		
Riverine Scrub-Shrub Wetland		Permanent/Pe	erennial	5		
11. Estimated Relative Abundance Common						
12. General Condition of AA i. Disturbance: (use matrix below to determine [circle] a aquatic nuisance vegetation species (ANVS) lists)	ppropriate response – see inst	ructions for Montana-list	ted noxious weed a	nd		
Conditions within AA	Managed in predominantly natural state; is not grazed, hayed, logged, or otherwise	minant conditions adjacent to Land not cultivated, but m moderately grazed or hay selectively logged; or has	ed or or logge	A ultivated or heavily grazed ed; subject to substantial fill ent, grading, dearing, or		
Conditions William 7.17	converted does not contain roads or buildings; and noxious weed or ANVS cover is ?15%.	subject to minor clearing; few roads or buildings; no weed or ANVS cover is ??	oxious building	gical alteration; high road or a density; or noxious weed S cover is >30%.		
AA occurs and is managed in predominantly natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or occupied buildings; and noxious weed or ANVS cover is 215%.	low disturbance	low disturban	ice mod	moderate disturbance		
AA not cultivated, but may be moderately grazed or hayed or selectively logged; or has been subject to relatively minor clearing, fill placement, or hydrological alteration; contains few roads or buildings; noxious weed or ANVS cover is ?30%.	moderate	moderate disturb	pance hi	high disturbance		
AA cultivated or heavily grazed or logged; subject to relatively substantial fill placement, grading, clearing, or hydrological alteration; high road or building density; or noxious weed or ANVS cover is >30%.	high disturbance	high disturban	hi	gh disturbance		
Comments: (types of disturbance, intensity, season Adjacent lands subject to livestock grazing and cultivation	· •					
ii. Prominent noxious, aquatic nuisance, other exoti	c species:					
moderate Cirsium arvense; many non-native grasses	manualina landa (h. 111					
iii. Provide brief descriptive summary of AA and sur AA includes pre-existing wetlands associated with Dry F the new creek section along the dam face.			and adjacent ex	cavated wetlands and		

13. Structural Diversity: (based on number of "Cowardin" vegetated classes present [do not include unvegetated classes], see #10 Modified Initial Is current management preventing (passive) existence of additional vegetated classes? Existing # of "Cowardin" Vegetated Classes in AA Rating R ating >=3 (or 2 if 1 is forested) classes NA NΑ NA Н 2 (or 1 if forested) classes NA NΑ NA М 1 class, but not a monoculture М <NO YES> L 1 class, monoculture (1 species comprises>=90% of total cover) NA NΑ NΑ Comments: scrub shrub area is filling in with many of the willows surviving and growing in size SECTION PERTAINING to FUNCTIONS_VALUES ASSESSMENT 14A. Habitat for Federally Listed or Proposed Threatened or Endangered Plants or Animals: i. AA is Documented (D) or Suspected (S) to contain (check one based on definitions contained in instructions): Primary or critical habitat (list species) D S D S Secondary habitat (list Species) Incidental habitat (list species) D S ✓ S No usable habitat ii. Rating (use the condusions from i above and the matrix below to arrive at [check] the functional points and rating) doc/secondary Highest Habitat Level doc/primary sus/primary sus/secondary doc/incidental sus/incidental None Functional Points and .9H .8H .7M .3L 1H .1L 0L Rating observations, MNHP Sources for documented use 14B. Habitat for plant or animals rated S1, S2, or S3 by the Montana Natural Heritage Program: (not including species listed in14A above) i. AA is Documented (D) or Suspected (S) to contain (check one based on definitions contained in instructions): Primary or critical habitat (list species) \bigcirc D \bigcirc S Secondary habitat (list Species) ● D ○ S Bald eagle, Great blue heron ● D ○ S Long-billed curlew, American White Pelican Incidental habitat (list species) No usable habitat ii. Rating (use the conclusions from i above and the matrix below to arrive at [check] the functional points and rating) Highest Habitat Level doc/primary sus/primary doc/secondary sus/secondary doc/incidental sus/incidental None S1 Species: Functional Points and .7M 1H .8H .6M .2L .1L 0L Rating S2 and S3 Species: Functional Points and .9H .7M .6M .5M .2L 0L .1L

Sources for documented use observations, MNHP

Rating

																			Mode	erate)	
ı bstantial (base	d on an	y of the	followin	g [che	ck]):						Minii	mal (b	ased or	n any of	the follo	owing	[check])):				
observations	of abun	dant wil	dlife #s	or high	n specie	es diver	sity (dui	ring an	y period	d)	\equiv				vations	during	j peak u	ise per	iods			
abundant wild	dlife sigr	such a	ıs scat, f	tracks,	nest st	ructure	s, game	trails,	etc.		lit	tle to r	no wildli	e sign								
presence of e	extremel	y limitin	g habita	t featu	ires not	availal	ole in the	e surro	unding	area	s	oarse a	adjacen	upland	food s	ources	;					
interviews wit	h local l	oiologist	ts with k	nowle	dge of t	he AA					in	terviev	vs with	ocal bio	ologists	with k	nowledg	ge of th	e AA			
oderate (based o	on any o	of the fo	llowing [[check]):																	
observations	of scatt	ered wil	dlife gro	ups or	individ	uals or	relative	ly few	species	during	peak pe	eriods										
common occu	urrence	of wildli	fe sign s	such a	s scat,	tracks,	nest str	uctures	s, game	trails, e	etc.											
adequate adja	acent up	oland fo	od sour	ces																		
interviews wit	h local l	oiologist	ts with k	nowle	dge of t	he AA																
i. Wildlife hab rom #13. For other in terms opermanent/pero erms])	class of of their	over to	o be co	nside positi	red ev	enly d	listribut (see #	ted, th	ne mos Abbrev	t and I	east p	revale urface	ent veg water	etateo durati	d class	es m	ust be ollows:	within P/P	20% o	f each		
Structural diversity (see				Hi	gh							Mode	erate					L	ow			
#13) Class cover																						
distribution (all vegetated classes)		Eve	en			Une	ven			Eve	en			Une	ven			E	/en			
Ouration of surface water in ≥ 10% of AA	P/P	S/I	T/E	Α	P/P	S/I	T/E	А	P/P	S/I	T/E	Α	P/P	S/I	T/E	А	P/P	S/I	T/E	А		
Low disturbance at AA (see #12i)	Е	Е	Е	Н	Е	Е	Н	Н	Е	Н	Н	М	Е	Н	М	М	Е	Н	М	М		
Moderate disturbance at AA see #12i)	Н	Н	Н	Н	Н	Н	Н	М	Н	Н	М	М	Н	М	М	L	Н	М	L	L		
High disturbance at AA (see #12i)	М	М	М	L	М	М	L	L	М	М	L	L	М	L	L	L	L	L	L	L		
iii. Rating (i Evidence of v							above	and t	the ma	V	Vildlife		ive at		rating			point	s and ı	rating		
Substantial			+		xcep			┢		High							e				Low	1
					1E			_		.91	Η					8H					.7M	
Moderate					.9 l	1		1		.71	М					5M					.3L	
Minimal					.6N	1		Г		.41	M					.2L					.1L	
4D. General I build be used isstorable due	eagl Fish H by fish to hal	labita	erican It Rati fish us onstra	ng: (se is ints,	Asses preclu	ican,	and lo	ion if	the A	A is u	all sp	y fish	of co	e exist	ting si	tuatio	on is "	∞rre d by f	ctable"	' such	is not	e AA
Habitat Qu			own / S	uspe	cted F	ish Sp	oecies	in AA	(usen	natrix t	o arrive	e at [c	heck tl	ne fund	tional	points	and ra	ating)				
										1	Seasonal / Intermittent Temporary / Ephemera											
in AA				Pe	ermanei	nt / Per	ennial					Seas	onal / In	termitte	nt				Tem	porary	/ Epheme	ral
in AA Aquatic hiding / re escape cover	esting/		Optima			nt / Pero dequate		Po	or	Oį	otimal	Seas	onal / Ir Adeq			Poor		Opti			/ Epheme equate	ral P

i. Habitat Quality and	Known	Suspec	tea Fish	Specie	es in A	A (usen	iatrix to	arnve a	ticheck	the funct	ionai po	ints and	rating)					
Duration of surface water in AA	Permanent / Perennial					Seasonal / Intermittent					Temporary / Ephemeral							
Aquatic hiding / resting / escape cover	Opt	imal	Adeq	uate	Po	oor	Opti	mal	Ade	quate	Po	or	Opti	mal	Aded	quate	Po	or
Thermal cover optimal/ suboptimal	0	S	0	S	0	S	0	S	0	S	0	S	0	S	0	S	0	S
FWP Tier I fish species	1E	.9H	.8H	.7M	.6M	.5M	.9H	.8H	.7M	.6M	.5M	.4M	.7M	.6M	.5M	.4M	.3L	.3L
FWP Tier II or Native Game fish species	.9H	.8H	.7M	.6M	.5M	.5M	.8H	.7M	.6M	.5M	.4M	.4M	.6M	.5M	.4M	.3L	.2L	.2L
FWP Tier III or Introduced Game fish	.8H	.7M	.6M	.5M	.5M	.4M	.7M	.6M	.5M	.4M	.4M	.3L	.5M	.4M	.3L	.2L	.2L	.1L
FWP Non-Game Tier IV or No fish species	.5M	.5M	.5M	.4M	.4M	.3L	.4M	.4M	.4M	.3L	.3L	.2L	.2L	.2L	.2L	.1L	.1L	.1L

Sources used for identifying fish sp. potentially fo	und in AA:									
ii. Modified Rating (NOTE: Modified score car a) Is fish use of the AA significantly reduced by a current final MDEQ list of waterbodies in need of fishery or aquatic life support, or do aquatic nuisa yes, reduce score in i above by 0.1: Modified	culvert, dil TMDL deve ance plant d	ke, or other n elopment wit	nan-made [°] s h listed "Pr	obable Imp	aired Ús	ses" includir	ng cold or w	varm water	ne If	
b) Does the AA contain a documented spawning comments) for native fish or introduced game fish		er critical hal (• N			he adjus	ted score in				
iii. Final Score and Rating:	Commen	its:								
14E. Flood Attenuation: (Applies only to wetla channel or overbank flow, click NA here		et to flooding eed to 14F.)	via in-chan	nel or overl	bank flov	w. If wetlan	ds in AA ar	e not floode	d from in-	
i. Rating (working from top to bottom, use the r										
Estimated or Calculated Entrenchment (Rosgen 1994, 1996)	Slightly	entrenched stream type			ely entre stream ty	enched – B	Entrencl	hed-A, F, G types	stream	
% of flooded wetland classified as forested and/or scrub/shrub	75%	25-75%	<25%	75%	25-75		75%	25-75%	<25%	
AA contains no outlet or restricted outlet	1H	.9H	.6M	.8H	.7M	.5M	.4M	.3L	.2L	
AA contains unrestricted outlet	.9H	.8H	.5M	.7M	.6M	.4M	.3L	.2L	.1L	
Slightly Entrenched	-	Moderately	Futron ab a d				Entrenched			7
ER = >2.2		ER = 1.	41 – 2.2			E	R = 1.0 – 1.4			
C stream type D stream type E stream	type	B strea	m type	A S	stream typ	e E	F stream type	e Gs	stream type	
2 x Bankfull De	pth	Bankfull D	epth		B	Flood-pro ankfull Wic		<u> </u>		_
Floodrpone 5	/ Bank	full	epth		B:	ankfull Wic		2.5		
Floodrpone 5 width	/ Bank width	full		res which r	2 =	ankfull Wid	lth nchment		ated	
Floodrpone 5 ii. Are ≥10 acres of wetland in the AA subject to within 0.5 mile downstream of the AA (check)?	/ Bank width	full		res which r	2 =	ankfull Wid	lth nchment		ated	
Floodrpone 5 width ii. Are ≥10 acres of wetland in the AA subject to	/ Bank width flooding Al	full n ND are man-ı		res which r	2 =	ankfull Wid	lth nchment		ated	
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Floodrpone width ii. Are ≥10 acres of wetland in the AA subject to within 0.5 mile downstream of the AA (check)? Comments: Creek is sourced by LDF Re 14F. Short and Long Term Surface Wat upland surface flow, or groundwater flow. 14G.) i. Rating (Working from top to bottom, us water durations are as follows: P/P = perm further definitions of these terms].) Estimated maximum acre feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding	/ Bank width flooding Al Y eservoir er Storage if no wetlar an ent/per	If ull n ND are man-IN N ge: (Applies ands in the strix below to the ennial; S/I :	to wetlan AA are su a arrive at = seasona	ds that flo bject to flo [check] th I/intermitt	2 = may be sood or pooding of the function and the function of	entrer ratio ratio ond from cor ponding onal point d T/E = ter	overbank of dick	or in-chanr NA here	nel flow, pree and procediations for see instruc	surface etions for
Floodrpone width ii. Are ≥10 acres of wetland in the AA subject to within 0.5 mile downstream of the AA (check)? Comments: Creek is sourced by LDF Reference was upland surface flow, or groundwater flow. 14G.) i. Rating (Working from top to bottom, us water durations are as follows: P/P = perm further definitions of these terms].) Estimated maximum acre feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding Duration of surface water at wetlands within the AA	/ Bank width flooding All Y esservoir er Storage If no wetlar an ent/per	Ifull ND are man-IN Ne (Applies ands in the activity below to tennial; S/I	to wetlan AA are su	ds that flo bject to flo [check] th I/intermitt	2 = may be s	entrer ratio significantly ond from cor ponding onal point d T/E = ter s/l	overbank on dick	or in-chann NA here	nel flow, pree and procesiations for see instructions for see instructi	surface etions for

Comments:

i. Rating (working from top to bot = low])	tom, use	the matrix b	elow to arr	rive at [check] the function	nal point	s and rati	ng [H	= high, l	M = m	noderate, or
Sediment, nutrient, and toxicant input levels within AA	AA receives or surrounding land use with potential to deliver levels of sediments, nutrients, or compounds at levels such that other functions are not substantially impaired. Minor sedimentation, sources of nutrients or toxicants, or signs of eutrophication present. Waterbody on MDE Q list of waterbodies in a development for "probable causes" related nutrients, or toxicants, or toxicants or AA receives or surrountients, or toxicants or toxicants of sedimentation, sources of nutrients or toxicants or toxicants or toxicants.						ted to urround ments, ubstant or toxic	sediment, ding land use nutrients, or tially impaired.			
% cover of wetland vegetation in AA	≥	eutroph 70%	ication pres	ent. < 70%		≥ 70		phicatio	n presen	t. < 7	0%
Evidence of flooding / ponding in AA	Yes	No	Yes	No	Y	es	No		Yes		No
AA contains no or restricted outlet	1H	.8H	.7M	.5M	.5	М	.4M		.3L		.2L
AA contains unrestricted outlet	.9Н	.7M	.6M	.4M	.4	М	.3L		.2L		.1L
Comments:											
14H Sediment/Shoreline Stabilization drainage, or on the shoreline of a stand proceed to 14I.)	ling water b	oody which is	subject to v	wave action. If	14H does not	apply, cli		ral or m NA hei		е	
i. Rating (working from top to bottom,% Cover of <u>wetland</u> streambank or	use the ma	atrix below to		heck] the funct surface water adj							
shoreline by species with stability ratings of ≥6 (see Appendix F).	Perman	nent / Perennial		Seasonal / Inte	ermittent	T	emporary / I	Epheme	ral		
≥ 65%		1H		.9Н			.71	1			
35-64%		.7M		.6M			.51	М			
250/											
< 35% Comments:		.3L		.2L			.1	L			
Comments: 14I. Production Export/Food Chai i. Level of Biological Activity (synt	hesis of wi	: Idlife and fish		ngs [check])			.11	L			
Comments: 14I. Production Export/Food Chai i. Level of Biological Activity (synt General Fish Habitat Rating (14D.iii.) E/H	hesis of wi	: ildlife and fish idlife Habitat M		ngs [check]) C.iii.)			.11	L			
14I. Production Export/Food Chai i. Level of Biological Activity (synt General Fish Habitat Rating (14D.iii.) E/H H	hesis of wi	: Idlife and fish		ngs [check])			.1	L			
14I. Production Export/Food Chai i. Level of Biological Activity (synt General Fish Habitat Rating (14D.iii.) E/H H M	hesis of wi	: Idlife and fish Idlife Habitat M		ngs [check]) C.iii.) L			.11	L			
Comments: 14I. Production Export/Food Chai i. Level of Biological Activity (synt General Fish Habitat G Rating (14D.iii.) E/H H M	hesis of wi	: ildlife and fish idlife Habitat M		ngs [check]) C.iii.) L M M			.11				
i. Level of Biological Activity (synt General Fish Habitat Rating (14D.iii.) E/H M L N/A ii. Rating (Working from top to bottom wetland component in the AA; Factor B subsurface outlet; the final three rows p [see instructions for further definitions of the component of the	n, use the n = level of the train to duff these term	: ildlife and fish idlife Habitat M H M M matrix below to biological activuration of surf	p arrive at [d vity rating face water in	ngs [check]) C.iii.) L M M L L check] the function above (14In the AA, where	ctional points a .i.); Factor C = e P/P, S/I, and	whether	Factor A or not the as previou	= acre AA coi sly defi	ntains a s ined, and	surface I A = "a	e or
i. Rating (Working from top to bottom wetland component in the AA; Factor B subsurface outlet; the final three rows p	n, use the n = level of these terracres Low	: iddlife and fish iddlife Habitat M H M M matrix below to biological activariation of surfims].	D arrive at [c vity rating frace water ir	ngs [check]) C.iii.) L M L L check] the function above (14)	ctional points a .i.); Factor C = e P/P, S/I, and	whether	Factor A or not the as previou	= acre AA coi sly defi	ntains a sined, and	surface I A = "a	e or
i. Rating (Working from top to bottom wetland component in the AA; Factor B subsurface outlet; the final three rows p [see instructions for further definitions of B High Moderate states of the component of the	n, use the n = level of the terrain to du f these terracres	: iddife and fish idlife Habitat M H M M matrix below to biological activation of surfims].)	p arrive at [d vity rating frace water ir	ngs [check]) C.iii.) L M L L check] the function above (14In the AA, where	etional points a i.i.); Factor C = e P/P, S/I, and	whether T/E are	Factor A or not the as previou	= acre AA coi sly defi	ntains a sined, and	surface I A = "a	e or absent"
i. Level of Biological Activity (synt General Fish Habitat Rating (14D.iii.) E/H M L N/A ii. Rating (Working from top to bottom wetland component in the AA; Factor B subsurface outlet; the final three rows p [see instructions for further definitions of A Vegetated component >5 & B High Moderate C Yes No Yes No	n, use the n = level of the terrain to du fi these terracres Low Yes 6M	: ildlife and fish idlife Habitat M H M M M M M M M M M M M	D arrive at [d vity rating frace water ir	ngs [check]) C.iii.) L M M L L check] the functor above (14In the AA, wher all above (14In the AA) where additional above	etional points a i.); Factor C = e P/P, S/I, and cres Low Yes No	whether dr/E are	Factor A or not the as previou	= acre AA con sly defi ated com Mode Yes	ntains a sined, and	cre Yes	e or absent"
i. Level of Biological Activity (synt General Fish Habitat Rating (14D.iii.) E/H M L N/A ii. Rating (Working from top to bottom wetland component in the AA; Factor B subsurface outlet; the final three rows p [see instructions for further definitions of A Vegetated component >5 & B High Moderate C Yes No Yes No P/P 1E 7H 8H 5M	n, use the n = level of the terrain to du fut these terraicres Low Yes .5M	: ildlife and fish idlife Habitat M H M M M M M M M M M M M	D arrive at [c vity rating frace water ir Vegetate igh No .5M .5M	ngs [check]) C.iii.) L M M L L check] the functor above (14In the AA, wher are ad component 1-5 and Moderate Yes No TH 4M	etional points a i.); Factor C = e P/P, S/I, and cres Low Yes No .3L	whether d T/E are	Factor A or not the as previou	= acre AA consly defi	ntains a sined, and conent <1 a crate No .4M	surface I A = "a cre Yes .3L	e or absent"
i. Level of Biological Activity (synt General Fish Habitat Rating (14D.iii.) E/H M L N/A ii. Rating (Working from top to bottom wetland component in the AA; Factor B subsurface outlet; the final three rows p [see instructions for further definitions of A Vegetated component >5 & B High Moderate C Yes No Yes No P/P 1E 7H 8H 5M	n, use the n = level of these terracres Low Yes Score canr Scover, and a score canr	: Iddlife and fish Iddlife Habitat M H M M M M M M M M M M M M M M M M M	D arrive at [c vity rating frace water in Vegetate igh No	ngs [check]) C.iii.) L M M L L Check] the function above (14In the AA, where the component 1-5 and Moderate Yes No .7H .4M .5M .3L .5M .2L .5M .2L	etional points a i.i.); Factor C = e P/P, S/I, and res Low Yes No .5M .3L .4M .2L .3L .1L etated Uplance thanical mowing	whether it T/E are H Yes .8H .7H .6M	Factor A or not the as previou Veget igh No .6M .4M	= acre AA consly define the construction of th	ntains a sned, and conent <1 a a conent <1	Yes .3L .2L	ow No .2L .2L

i. Discharge Ind	icators				ii.	Recharge	Indicators	;
The AA is a slope we			,					ying impeding layer
Springs or seeps are						inlet but no o		
Vegetation growing d Wetland occurs at the	-		ught	Othe		n 'los ing' strea	am; discharg	e volume decreases
Seeps are present at				Oule	1.			
AA permanently floor		-						
Wetland contains an	-							
Shallow water table a	nd the site is	saturated to	the surface					
Other: Occurs belo	ow major da	m						
i. Rating (use the inform	nation from i :	and ii ahove	and the table	helow to arri	ive at [check]	I the function	al noints and	d rating)
ii. Ruung (use the intern	iation nonn c	and ii above		ration at AA	Wetlands FR	OM GROUND	NATER DISC	HARGE OR WITH WATER
				THAT IS	RECHARGING	G THE GROUN	IDWATER SY	STEM_
Criteria			P/P		S/I		Т	None
Froundwater Discharge or Re	echarge		1H		.7M		.4M	.1L
nsufficient Data/Information						NA		
I-								
omments: Occurs at	the base of	dam and r	eceives seep	age				
AK Uniquenessi								
4K. Uniqueness: Rating (working from to	op to bottom,	use the mat	rix below to an	ive at [chec	k] the functio	nal points an	d rating)	
•				AA does	not contain	previously		
21			varm springs		re types and			s not contain previously
Replacement potential		e (>80 yr-old r plant assoc	i) forested ciation listed		(#13) is high ociation listed			re types or associations uctural diversity (#13) is
		S1" by the M		plant acce	the MTNHF			low-moderate
Estimated relative	rare	commo	abundant	rare	common	abundant	rare	common abundant
bundance (#11) ow disturbance at AA		n						
#12i)	1H	.9H	.8H	.8H	.6M	.5M	.5M	.4M .3L
Moderate disturbance at	.9H	.8H	.7M	.7M	.5M	.4M	.4M	.3L .2L
AA (#12i) ligh disturbance at AA	.0.1				.0141			
#12i)	.8H	.7H	.6M	.6M	.4M	.3L	.3L	.2L .1L
							,	
omments:								
4L. Recreation/Education Is the AA a known or potential to the proceed to the second sec	otential rec./o	ed. site: (ch summary ar	neck) Y nd rating page)	NO	(if 'Yes' con	tinue with the	e evaluation;	if 'No' then click
ii. Check categorie Other	es that apply	to the AA:	✓ Education	nal/scientific	study; 🔽 C	Consumptive	rec.; _ V No	n-consumptive rec.;
	below to arriv	ve at [check] the functiona	l points and	rating)			
i. Rating (use the matrix							- I 1	Known Potential
	or Education A	rea					ı r	
ii. Rating (use the matrix Known or Potential Recreation Public ownership or public e			c access (no pe	rmission req	uired)			4511
Known or Potential Recreation	asement with o	general publi		rmission req	uired)			.15H .1M
Cnown or Potential Recreation Public ownership or public es	asement with o	general publi ss (no permi	ssion required)	•	·	ess		.2H .15H
Cnown or Potential Recreation Public ownership or public ex Private ownership with gener	asement with o	general publi ss (no permi	ssion required)	•	·	ess		.2H .15H .1M
chown or Potential Recreation Public ownership or public extrivate ownership with gener	asement with o	general publi ss (no permi	ssion required)	•	·	ess		.2H .15H .1M
Chown or Potential Recreation Public ownership or public extrivate ownership with gener Private or public ownership w Domments: Junting, birdwatching	asement with o	general publi ss (no permi	ssion required)	•	·	ess		.2H .15H .1M
rivate or public ownership virivate or public ownership with generativate or public ownership virivate.	asement with o	general publi ss (no permi	ssion required)	•	·	2988		.2H .15H .1M

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units: (Actual Points x Estimated AA Acreage)	Indicate the four most prominent functions with an asterisk (*)
A. Listed/Proposed T&E Species Habitat	L	0	1	0	
B. MT Natural Heritage Program Species Habitat	М	.6	1	5.082	V
C. General Wildlife Habitat	Н	.9	1	7.623	✓
D. General Fish Habitat	М	.5	1	4.235	
E. Flood Attenuation	М	.6	1	5.082	
F. Short and Long Term Surface Water Storage	Н	.8	1	6.776	
G. Sediment/Nutrient/Toxicant Removal	Н	1	1	8.47	✓
H. Sediment/Shoreline Stabilization	М	.7	1	5.929	
Production Export/Food Chain Support	Е	1	1	8.47	
J. Groundwater Discharge/Recharge	1 H	1	1	8.47	✓
K. Uniqueness	М	.4	1	3.388	
L. Recreation/Education Potential (bonus points)	Н	.2	NA	1.694	
Totals:		7.7	11	65.219	
Percent of Possible Score	•		70 %		

Category I Wetland: (must satisfy one of the following criteria; otherwise go to Category II) Score of 1 functional point for Listed/Proposed Threatened or Endangered Species; or Score of 1 functional point for Uniqueness; or Score of 1 functional point for Flood Attenuation and answer to Question 14E.ii is "yes"; or Percent of possible score > 80% (round to nearest whole #).	
Category II Wetland: (Criteria for Category I not satisfied and meets any one of the following criteria; otherwise go to Category IV Score of 1 functional point for MT Natural Heritage Program Species Habitat; or Score of .9 or 1 functional point for General Wildlife Habitat; or Score of .9 or 1 functional point for General Fish Habitat; or "High" to "Exceptional" ratings for both General Wildlife Habitat and General Fish/Aquatic Habitat; or Score of .9 functional point for Uniqueness; or Percent of possible score > 65% (round to nearest whole #).	/)
Category III Wetland: (Criteria for Categories I, II, or IV not satisfied)	
Category IV Wetland: (Criteria for Categories I or II are not satisfied and all of the following criteria are met; otherwise go to Category III) "Low" rating for Uniqueness; and Vegetated wetland component < 1 acre (do not include upland vegetated buffer); and Percent of possible score < 35% (round to nearest whole #).	

OVERALL ANALYSIS AREA RATING: (check appropriate category based on the criteria outlined above)

1	II	Ш	IV

Appendix C

Project Area Photographs

MDT Wetland Mitigation Monitoring Lonepine Wetland Mitigation Project Flathead Indian Reservation, Montana







Photo Point 1 – Photo 1 Bearing: 90 Degrees

Location: South edge of Cell 2 **Taken in 2009**



Photo Point 1 – Photo 1 Bearing: 90 Degrees

Location: South edge of Cell 2 **Taken in 2010**







Photo Point 1 – Photo 2 Bearing: 0 Degrees

Location: South edge of Cell 2 **Taken in 2009**



Photo Point 1 – Photo 2 Bearing: 0 Degrees

Location: South edge of Cell 2 Taken in 2010



Photo Point 2 – Photo 1 Bearing: 90 Degrees

Location: Between Cell 1 and cell 2 **Taken in 2009**







Photo Point 2 – Photo 1 Bearing: 90 Degrees

Location: Between Cell 1 and cell 2 **Taken in 2010**



Photo Point 3 – Photo 1 Bearing: 180 Degrees

Location: Northwest corner of project area **Taken in 2009**



Photo Point 3 – Photo 1 Bearing: 180 Degrees

Location: Northwest corner of project area

Taken in 2010







Photo Point 4 – Photo 1 Bearing: 270 Degrees

Location: Along Dry Fork Creek Taken in 2009



Photo Point 4 - Photo 1 Bearing: 270 Degrees

Location: Along Dry Fork Creek **Taken in 2010**



Photo Point 5 – Photo 1 Bearing: 0 Degrees

Location: Along Dry Fork Creek **Taken in 2009**



Photo Point 5 – Photo 1 Bearing: 0 Degrees

Location: Along Dry Fork Creek Taken in 2010







Photo Point 6 – Photo 1 Bearing: 270 Degrees

Location: Northern shore of Cell 4 **Taken in 2009**



Photo Point 6 – Photo 1 Bearing: 270 Degrees

Location: Northern shore of Cell 4
Taken in 2010



Photo Point 7 – Photo 1 Bearing: 315 Degrees

Location: Southern shore of Cell 4 **Taken in 2009**



Photo Point 7 – Photo 1 Bearing: 315 Degrees

Location: Southern shore of Cell 4 **Taken in 2010**







Photo Point 8 – Photo 1 Bearing: 315 Degrees

Location: Open water in Cell 5 **Taken in 2009**



Photo Point 8 – Photo 1 Bearing: 315 Degrees

Location: Open water in Cell 5 **Taken in 2010**



Photo Point 8 – Photo 2 Bearing: 90 Degrees

Location: South boundary of project area **Taken in 2009**







Photo Point 8 – Photo 2 Bearing: 90 Degrees

Location: South boundary of project area **Taken in 2010**



Photo Point 9 – Photo 1 Bearing: 180 Degrees

Location: Western edge of Cell 4 **Taken in 2010**



Photo Point 10 – Photo 1 Bearing: 180 Degrees

Location: Start Veg Tran 1
Taken in 2009



Photo Point 10 – Photo 1 Bearing: 180 Degrees

Location: Start Veg Tran 1
Taken in 2010







Photo Point 12 – Photo 1 Bearing: 0 Degrees

Location: Start Veg Tran 2 Taken in 2009



Photo Point 12 – Photo 1 Bearing: 0 Degrees

Location: Start Veg Tran 2
Taken in 2010



Photo Point 13 – Photo 1 Bearing: 180 Degrees

Location: End Veg Tran 2 Taken in 2009



Photo Point 10 – Photo 1 Bearing: 180 Degrees

Location: End Veg Tran 2
Taken in 2010







Photo Point 14 – Photo 1 Bearing: 180 Degrees

Location: View of project area from northwest corner **Taken in 2009**



Photo Point 14 – Photo 1 Bearing: 180 Degrees

Location: View of project area from northwest corner **Taken in 2010**







Photo Point 15 – Photo 1 Bearing: 180 Degrees

Location: View of project area from dam surface **Taken in 2009**



Photo Point 15 – Photo 1 Bearing: 180 Degrees

Location: View of project area from dam surface **Taken in 2010**





Appendix D

Project Plan Sheet

MDT Wetland Mitigation Monitoring Lonepine Wetland Mitigation Project Flathead Indian Reservation, Montana





